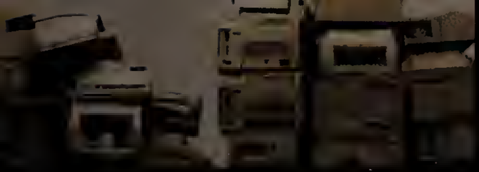

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JANUARY 18, 2010 | VOL. 44, NO. 2 $5/COPY

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Sure, it's cute. But it's also a serious computer with business data to protect. Here's how. PAGE 20

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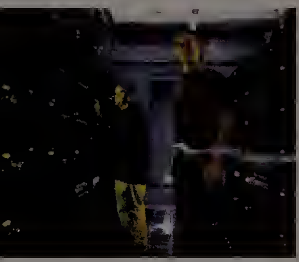

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■ ONLINE CHATTER

RESPONSES TO:

Y2K: The Good, the Bad and the Crazy

Dec. 28, 2009

Having worked on preparing a major financial system for Y2K, I can say that we prevented problems that would have caused a lot of misery for both the company and millions of customers. A huge effort went into making sure Y2K came and went without trouble, and it is rather frustrating that so many people dismiss it all as hype from Y2K remediation consultants.

Believe me, if people had discovered that their portfolios were being priced with data from the previous century, they would have thought there was a *big* problem!

■ **Submitted by:** *Justin Fisher*

Y2K may have served to put IT on the map in some places, but in others it put IT in front of the firing squad.

Yes, IT departments were called up to solve the problem, but many businesses realized the truth, and that was that IT caused the problem in the first place. IT needed to be watched so they did not make such a blunder again.

■ **Submitted by:** *sphynx*

RESPONSES TO:

Five Big Questions About Cloud Computing

Dec. 22, 2009

I'm pretty amazed that cybersecurity is not one of the top five concerns. Am I to understand that this issue is totally resolved? I doubt it!

■ **Submitted by:** *Anonymous*

A couple more big questions: What do you do if the cloud provider goes out of business? Or decides it's no longer profitable to maintain the service? Or changes protocols? Or drops support in your country? Or gets hacked and loses everything?

The point is, you're relying on a third party to provide services. If that third party goes away, you've lost everything.

Hope there's a local backup.

■ **Submitted by:** *Griff*

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Y2K
10 YEARS LATER

Y2K: The Good, the Bad and the Crazy

The notorious Y2K bug put IT on the map – and nearly stripped it of its credibility. Ten years later, we remember the upsides, the downsides and how techies rang in the new millennium. computerworld.com/s/article/9142555

Firefox 3.6 RC Gives New Life to an Old Browser

REVIEW: Firefox 3.6 is almost here. If the release candidate is any indication, it'll look mighty good. computerworld.com/s/article/9144089

IT's 5 Big Security Mistakes

OPINION: We've always been terrible in IT about learning from our mistakes. Let's do better this year, so we don't keep repeating them, urges Kenneth van Wyk. computerworld.com/s/article/9144300

Social Media Marketing: 5 Must-Read Books

Still pondering social media marketing? It's time to get smart with these essential books. computerworld.com/s/article/9142090

Conficker Worm Just Keeps On Coming

SECURITY MANAGER'S JOURNAL: Without a comprehensive patching program in place, it's hard to keep PCs free of malware. computerworld.com/s/article/9143778

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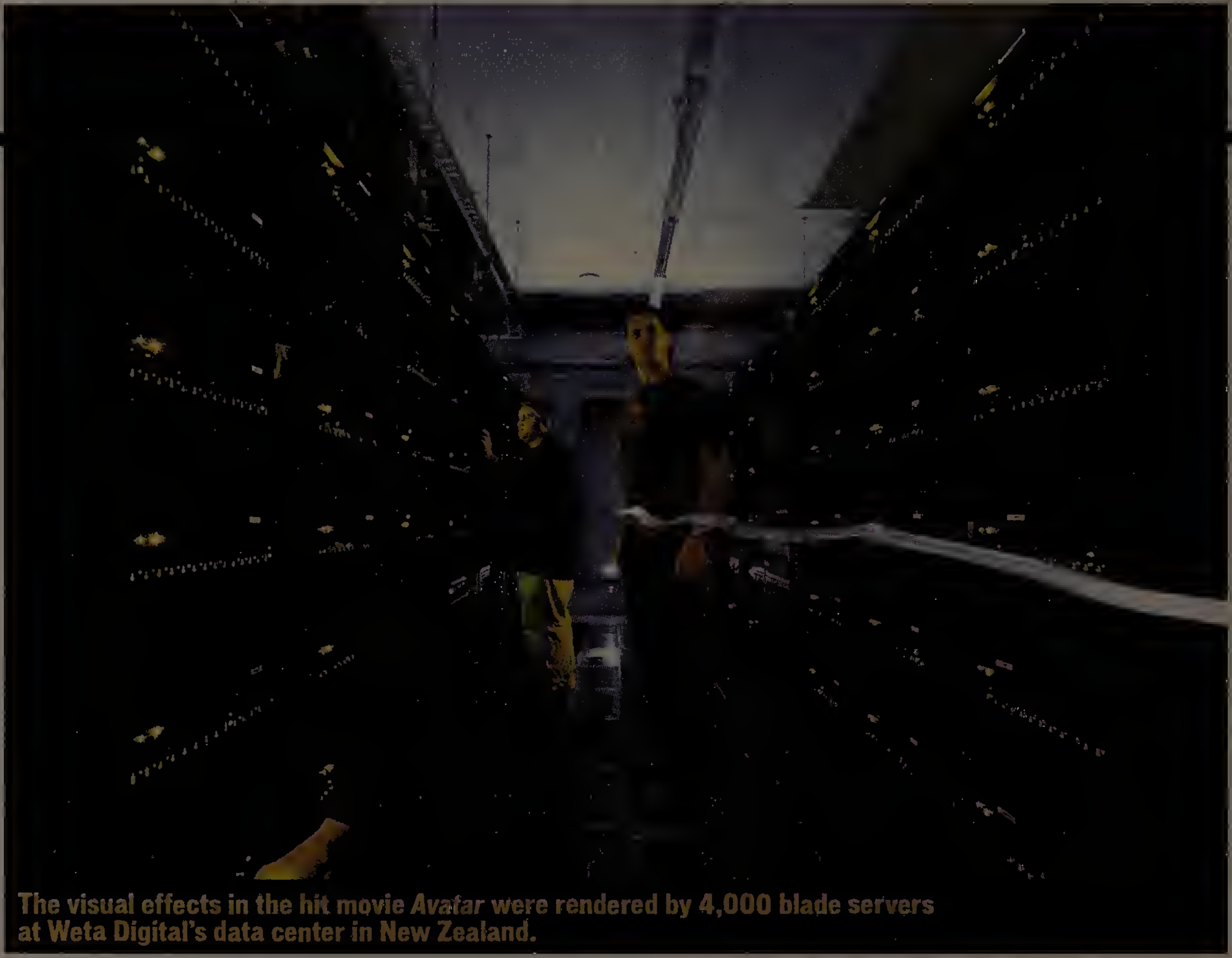
The visual effects in the hit movie *Avatar* were rendered by 4,000 blade servers at Weta Digital's data center in New Zealand.

FOUNDRY NETWORKS INC

BEHIND THE SCENES

Data Center Plays Supporting Role in 'Avatar'

THE FUTURISTIC world and blue creatures in the hit movie *Avatar* have their roots in an unusual data center situated in Miramar, a suburb of Wellington, New Zealand.

The stunning images in the James Cameron movie were created by Weta Digital Ltd., a visual effects company co-founded by filmmaker Peter Jackson that was also responsible for the computer-rendered scenes in *The Lord of the Rings* trilogy.

The company's digital artists transformed the director's vision into screen reality using 3-D imaging software, fine-tuning every frame multiple times. Each minute of *Avatar* represents 17.28GB of data, according to Weta Digital.

At the heart of the data-intensive process is a 10,000-square-foot server farm that's packed with 34 racks and more than 4,000 Hewlett-Packard blade servers, said Paul Gunn, the data center's systems administrator, in an e-mail. The computing core includes about 35,000 processors and 104TB of RAM, he said.

Because the servers run 24 hours at full capacity when a deadline looms, typical air conditioning techniques couldn't keep up with the heat generated by the servers. So the center uses water-cooled racks from Rittal Corp. and "free cooling" courtesy of the area's chilly climate, Gunn said.

Moreover, "the server farm is only cooled to 25C (77F), which is warmer than many data centers," said Gunn. "By not cooling unnecessarily, we make additional energy efficiency gains."

– Mitch Betts

RESEARCH RECAP

State, Local Gov'ts Expected to Boost Cloud IT Spending

The city of Los Angeles gave cloud computing a big endorsement in 2009 when it decided to adopt Google Apps, and now many other state and local governments may follow suit with their own cloud initiatives, according to a new study by Input Inc.

The market research firm estimated that spending on cloud computing by state and local governments will increase 22% annually from 2009 through 2014, or from $230 million to $620 million. The spending is on both internal and external cloud deployments. Overall, state and local governments spend about $56.6 billion on IT.

One model that may gain favor with state governments is providing IT services to local governments via their own state clouds. Utah and Michigan are developing cloud services that could be made available to other governments.

Local governments may also want to copy the Los Angeles deal with Google, said Input analyst Alexander Rossino. LA's move to replace its internally hosted e-mail system with Google Apps "could have a ripple effect," he said.

However, Rossino said many states are waiting for the federal government to establish standards and select its own cloud vendors.

– PATRICK THIBODEAU

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BETWEEN THE LINES

By John Klossner

FUTURE WATCH

Mobile App Offers Trilingual Translation

TRAVELERS IN East Asia may soon be able to use their cell phones for quick, easy and cheap language translation, thanks to a new prototype application from researchers at Toshiba Corp.

The company has developed a trilingual translation system with voice recognition and synthesis that's compact and light enough to be installed in a cell phone. Unlike other mobile translation applications, the software doesn't offload processing to a server on a network but performs the task inside the phone.

The software, which is a pared-down version of a PC application that Toshiba already sells in Japan, can translate freely between Japanese, English and Chinese.

Once work on the application at Toshiba's research department is complete, the cell phone version will be turned over to business units for commercialization. The Windows Mobile application could be modified to run on other operating systems, such as Android or iPhone OS, but future plans are yet to be decided.

The software works by first employing speech recognition to determine the language and what has been said. It then uses one of two translation methods — statistical machine translation or rule-based machine translation — to parse the sentence and break it down into its components. The translation is then performed, and a speech synthesis engine delivers the result.

Statistical machine translation analyzes word order and assesses probabilities to determine the meaning of a sentence; the rule-based method utilizes a database of hundreds of sentences and phrases to extract the meaning.

Toshiba's PC version uses both methods simultaneously. But cell phones lack the processing power necessary to run both, so the mobile version uses statistical machine translation for Chinese translations and rule-based translation for the others.

– Martyn Williams, IDG News Service

Micro Burst

In a recent survey,

19%

of IT managers said the release of Windows 7 is accelerating their plans to upgrade PCs.

SOURCE: [illegible] OF 175 C[illegible] DECEMB[illegible]

THINK TANK

Can You Handle High-Def?

Today's CIOs may get blindsided by a technology they don't often think about: video, specifically high-definition video in the enterprise, according to CIO coach and consultant Jim Anderson, head of Blue Elephant Consulting in Tampa, Fla.

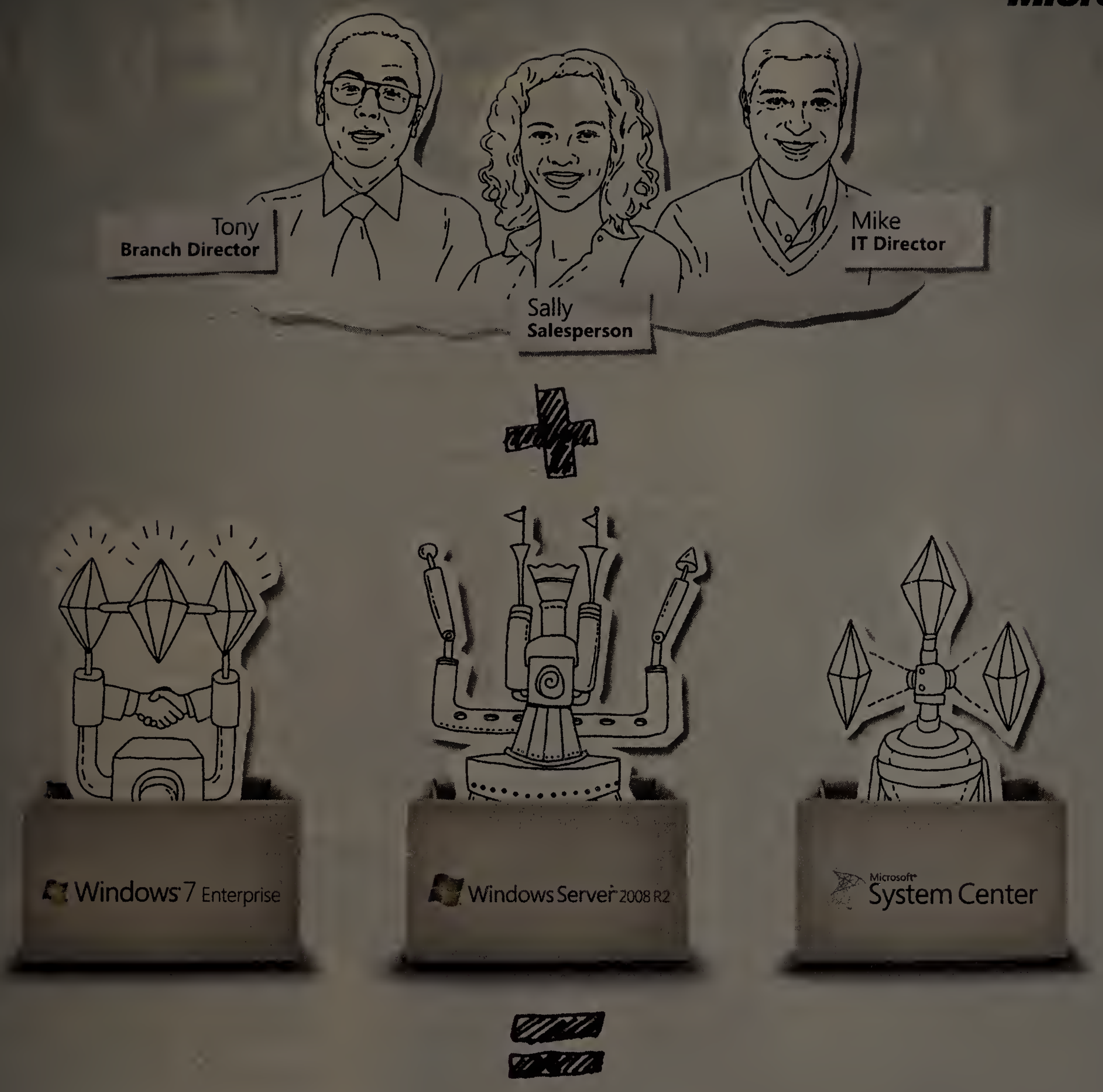
Market researchers expect to see a rapid increase in enterprise use of streaming video for sales and marketing purposes, virtual trade shows, training programs and more.

The problem, of course, is that HD video is a bandwidth hog, Anderson said in a blog post titled "Will Video Kill the CIO?"

He suggested that companies will need networks that are more robust and reliable to handle multiple HD video streams, because users will expect to see smooth full-screen video without jitter or packet loss.

Standard video requires streams of 1M to 2.5Mbit/sec., but HD needs 4M to 7Mbit/sec., Anderson said, adding, "Don't even get me started on what this is going to mean for your data storage needs."

– MITCH BETTS



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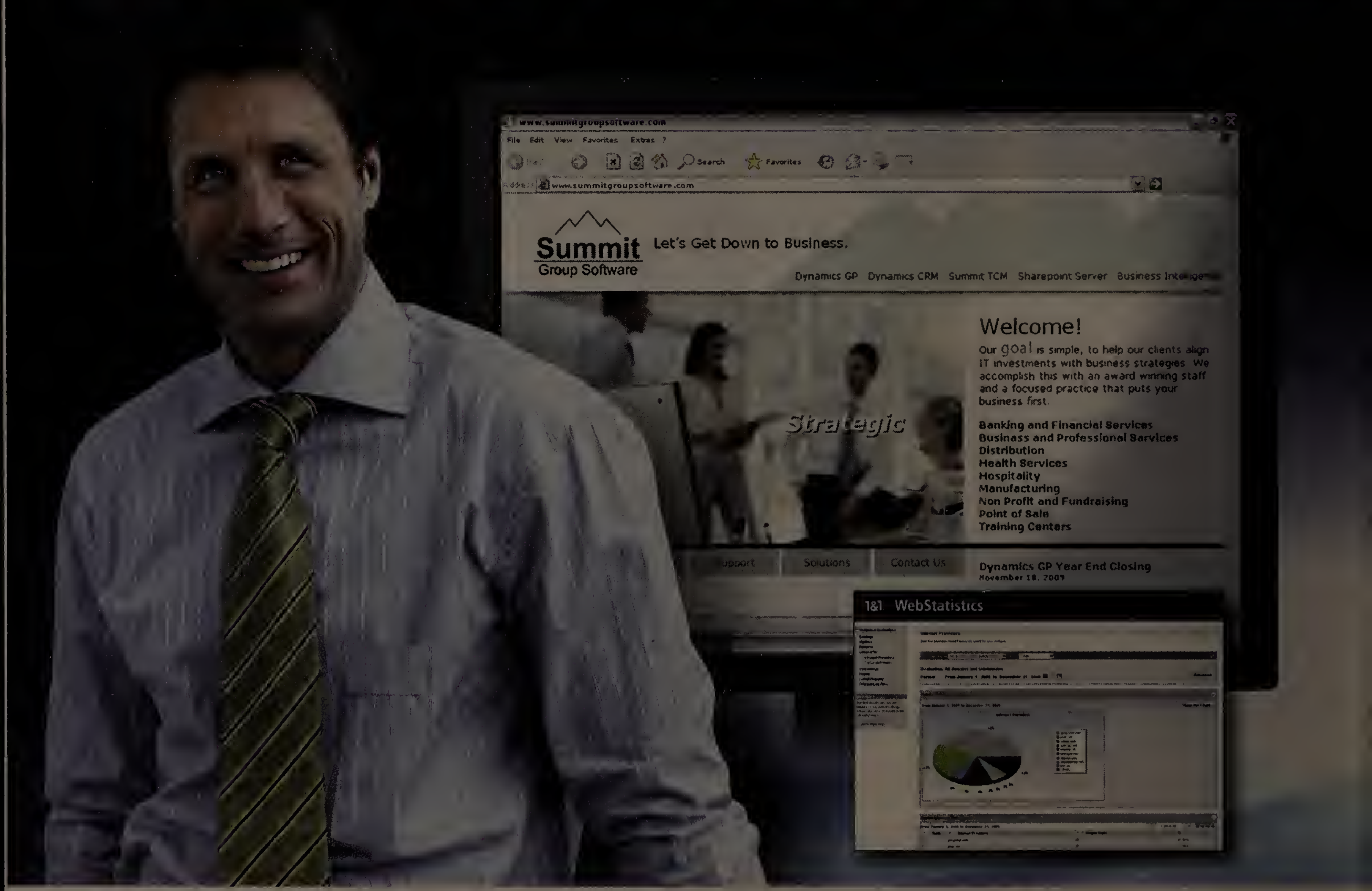

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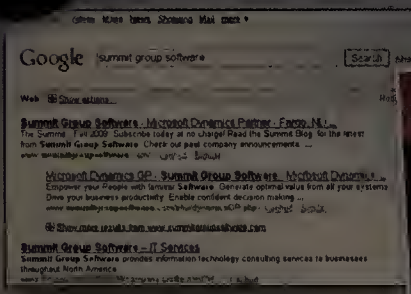

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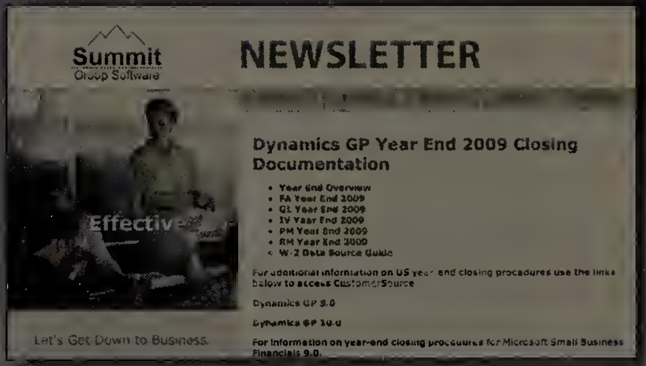

Dynamics GP Year End 2009 Closing Documentation

- Year End Overview
- FA Year End 2009
- GL Year End 2009
- IV Year End 2009
- PM Year End 2009
- RM Year End 2009
- W-2 Data Source Guide

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For information on year-end closing procedures for Microsoft Small Business Financials 9.0.

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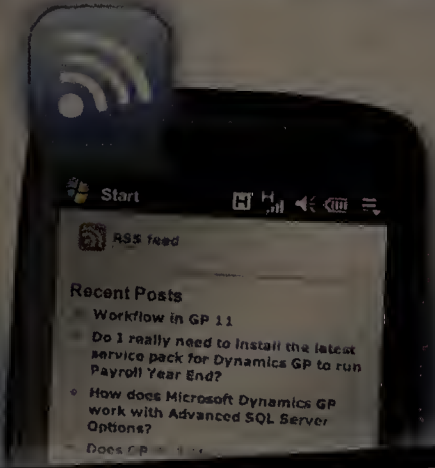

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SECURITY MONITOR

User Authentication No Longer Thwarts Online Bank Thieves

SECURITY MEASURES such as the use of one-time passwords and phone-based user authentication — considered among the most robust forms of IT defenses — are no longer enough to protect online banking systems against fraud, a Gartner Inc. report warns.

Cybercriminals are using increasingly sophisticated tactics to outmaneuver security systems so they can steal customers' log-in credentials and pillage their bank accounts, according to Gartner analyst Avivah Litan, who wrote the report.

Trojan horse programs lurking inside a customer's Web browser can steal one-time passwords and immediately transfer funds, or intercept a transaction between a bank and a customer and make changes unbeknownst to the user or the bank, Litan said.

In cases where a bank uses a phone-based, "out of band" authentication system, criminals use call forwarding so that the fraudster, not the legitimate customer, gets the call from the financial institution, Litan said.

Banks need to quickly implement additional layers of security, she advised.

Because any authentication method that relies on a browser can be attacked and defeated, banks should start using server-based fraud detection to monitor transactions for suspicious patterns, Litan said. The goal is to monitor log-in, navigation and transaction activity to spot any abnormalities that suggest an automated program is accessing an application, she said.

For example, a European bank using that kind of monitoring technology discovered that a Trojan completes transactions much faster than a human would; a Trojan can take as little as one second to enter a money transfer amount and press OK, whereas a human would take 20 to 30 seconds.

Litan recommended that fraud monitoring tools be used to check for significant differences between online banking transaction patterns and a customer's usual behavior.

The FBI's Internet Crime Complaint Center reports that each week, the FBI sees several new cases opened involving complaints of cyberfraud.

- Jaikumar Vijayan

CHRISTIAN JANSKY

PRIVACY ALERT

Losing control: Sending hard disks to third-party data recovery services may be a great way to restore lost or corrupted computer files, but doing so raises the risk that personal data about employees and customers will be exposed, according to a study by Ponemon Institute LLC, a privacy research center. The study, based on a survey of 636 IT professionals, found that data recovery services were responsible for 19% of privacy breach incidents. Only 20% of the survey respondents said they believe that data security is a major criterion in the selection of a data recovery service, though 82% said it should be.

SOURCE: PONEMON INSTITUTE LLC, TRAVERSE CITY, MICH.

BOOK REVIEW

The Shift to Enterprise 2.0 Won't Be Easy

In a 2006 article in *Sloan Management Review*, MIT researcher Andrew McAfee coined the term *Enterprise 2.0*, which simply means using Web 2.0 technologies, such as blogs, wikis, Google Docs and social networks, as tools for collaboration in a business setting. The hope is that this post-groupware technology will help businesses solve problems, capture employee knowledge and insights, and generally lead to more innovation.

Of course, the next step was for McAfee to expand the article into a book, naturally titled *Enterprise 2.0* (Harvard Business Press, 2009).

Although the book has an official publication date of Dec. 1, 2009, much of it reads like it's 2006, 2007 or 2008 all over again. Facebook is presented as though it's a new phenomenon, and for the umpteenth time we hear about the history of Wikipedia and the value of "folksonomy" tagging in Delicious.

This first half of the book may be valuable background for a few clueless executives, but it's a real yawner for anyone who has read a business magazine in the past few years, not to mention the millions of businesspeople actively using Web 2.0 technologies today.

The second half of the book is somewhat better because it focuses on the serious challenge of getting corporate employees to actually use Web 2.0 tools internally on a sustained basis.

McAfee readily acknowledges that Enterprise 2.0 won't be an overnight success in the workplace – more of a hard slog. Why? Because employees will stick with the status quo, the technology they know best, which is e-mail (with attachments), even though e-mail is a poor collaboration tool.

Indeed, one way for managers to hasten the adoption of Enterprise 2.0 is to say, "On this project, we'll only be using [name of Web 2.0 tool of choice], and I won't be reading e-mail about it." It helps if the Web 2.0 technology in question is easy to use, used by managers themselves and integrated with the normal workflow of the job, rather than being just One More Thing to Do.

But this is a generational issue. It won't be long before incoming workers – raised on Facebook – will expect Web 2.0 tools to be as much a part of office life as a desk and a chair.

- MITCH BETTS

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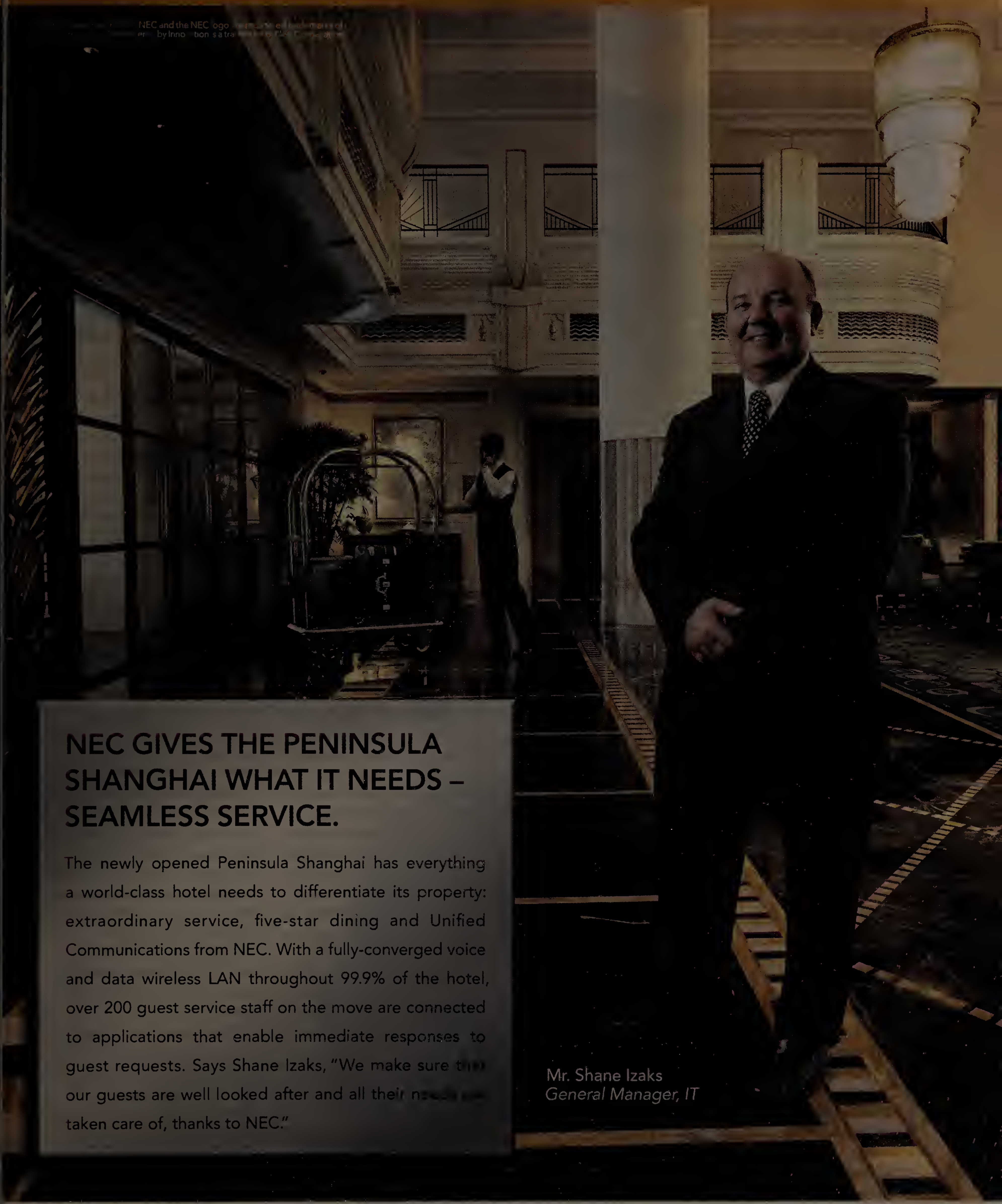

NEC GIVES THE PENINSULA SHANGHAI WHAT IT NEEDS – SEAMLESS SERVICE.

The newly opened Peninsula Shanghai has everything a world-class hotel needs to differentiate its property: extraordinary service, five-star dining and Unified Communications from NEC. With a fully-converged voice and data wireless LAN throughout 99.9% of the hotel, over 200 guest service staff on the move are connected to applications that enable immediate responses to guest requests. Says Shane Izaks, "We make sure that our guests are well looked after and all their needs are taken care of, thanks to NEC."

Mr. Shane Izaks
General Manager, IT

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Kaiser, VA Join to Give E-health Efforts a Boost

Incentives in the stimulus bill are also expected to foster a rapid spread of e-health records. **By Lucas Mearian**

THE E-HEALTH revolution got a shot in the arm earlier this month when health care network giant Kaiser Permanente and the U.S. Department of Veterans Affairs declared a months-long pilot program of sharing patient electronic health records (EHR) a success.

The pilot program links health records of San Diego area residents stored in the VA's Veterans Affairs Health Information Systems and Technology Architecture (VistA) and Kaiser Permanente's HealthConnect electronic health systems.

Patients must agree to be part of the shared system, which uses the Nationwide Health Information Network, a set of government protocols and standards designed to allow the secure exchange of health information between physicians at both private practices and hospitals.

During a press briefing in San Diego, officials from the VA and Kaiser Permanente also outlined plans to add the EHRs of Department of Defense personnel to the e-health system and to expand the program geographically in the coming months.

Dr. Stephen L. Ondra, the VA's senior policy adviser for health affairs, said that since most veterans receive some medical care outside of VA or DOD facilities, interoperability between federal agencies and the private sector is essential to providing adequate medical care.

Ondra said that gathering the paper records of a single patient could take weeks. The same process takes seconds using EHRs. "The net effect is clearly an improvement in quality, an increase in patient safety and a tremendous improvement in efficiency," he said.

Such EHR efforts are likely to become far more widespread as the $17 billion designated for incentive payments for e-health record projects in the American Recovery and Reinvestment Act becomes available.

To date, only about 25% of the nation's 5,000 hospitals have rolled out EHR systems, and only a small fraction of physician practices have done the same. Industry observers cite the high price tag of EHR systems, which can run into the millions of dollars for hospitals and tens of thousands of dollars for small medical practices.

Those costs would be somewhat offset by the payments provided by the stimulus bill's Health Information Technology for Economic and Clinical Health (HITECH) Act, which will provide up to $64,000 in reimbursement payments to health care operations that deploy EHRs and prove that they are effectively using such systems by January 2011.

The law aims to speed the process by cutting the reimbursement amount available in each successive year. Also, the HITECH legislation calls for cutting Medicaid and Medicare reimbursements to medical facilities that don't deploy EHR systems by 2015.

In light of such deadlines, IBM's Global Financing unit announced last year that it had signed deals to offer financing at rates starting at 3% to users who buy e-health systems sold by four IT partners.

Christine Chang, an e-health IT analyst at research firm Ovum, said she expects more lenders to follow suit.

"No one was saving up money" to upgrade IT infrastructure so it would meet the requirements of the HITECH statute, Chang said. "Early adopters went ahead and made the investment, but most [organizations] were waiting. Suddenly, if you don't do it now — literally in 2010 — you won't get the incentives." ■

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Google Risks Losing Focus Amid Expansion

Moving to cut its reliance on search, the company is challenging Microsoft and Apple.

By Sharon Gaudin

GOOGLE INC. started the new year the same way it ended the old one — trying to expand its business to lessen its dependence on its lucrative search offering.

This month's unveiling of the Google-branded and -designed Nexus One mobile phone, last summer's disclosure that the company is developing an operating system, and last September's release of the Google Wave collaboration tools pushed the company pretty far afield from its phenomenally successful search roots.

Analysts agree that Google must find new markets to at least maintain its growth rate, but they note that any path it takes is fraught with risk.

"The phone is a potentially a brilliant move," said Rob Enderle, principal analyst at Enderle Group. "You've got to credit them with the guts to try this."

However, he added that Google must beware of losing its focus. "There is a risk here of Google losing its way, [but] there's risk with regard to everything," Enderle said. "If all of us avoided risk, we wouldn't get out of bed in the morning."

Those risks became evident after the Jan. 5 launch of Google's smartphone, when angry users flooded message boards with complaints about confusing support options.

"Customer support is a huge effort even for a company of Google's size, because they have never really had hardware support inside Google," said Ken Dulaney, an analyst at Gartner Inc. Added Will Stofega, an analyst at IDC, "It's almost inconceivable these problems weren't anticipated."

Stofega predicted that Google will overcome its Nexus One difficulties, which he said should serve as a lesson for company executives.

Just over 11 years ago, Google was launched as a search engine business and used its single offering to quickly grow into an online behemoth — one of the great Internet success stories. Today, Google owns the search market, with a 64% share.

Three or four years ago, Google focused its first expansion efforts on adding popular features like Google Maps and Google Earth to its search tool. Then it brought out the hosted Google Apps cloud computing suite and the Android mobile operating system.

In recent months, Google has disclosed that it is developing a Linux-based online operating system and a browser that will challenge Microsoft Corp.'s Windows and Internet Explorer. The Nexus One targets popular devices like Apple Inc.'s iPhone and Research In Motion Ltd.'s BlackBerry.

"Underneath it all, Google doesn't think of itself as a search company, even though that's been their big success," said Enderle. "Ultimately, search isn't sustainable. Google search could become irrelevant. The market has a tendency to move, and one-trick ponies have a history of not surviving."

Analysts also said that taking on the top industry players' strongest businesses is risky, noting that Microsoft moved quickly to counter Google's attacks.

"These two companies really squared off this year," said Jim McGregor, an analyst at In-Stat. "For Google, it's about expanding, and for Microsoft, it's about a life-or-death challenge. This is going to be a prolonged activity."

Analysts wouldn't predict whether Google's moves into new businesses will succeed.

But Dan Olds, an analyst at Gabriel Consulting Group Inc., gave Google credit for trying to expand.

"In general, I think Google is pursuing the right strategies," said Olds. "However, at some point, these new lines of business will need to earn their own way. Right now, virtually every Google initiative is supported by the cash cow — the search business and its advertising. The other businesses need, at some point, to earn their keep." ■

Nancy Gohring *of the IDG News Service contributed to this story.*

> **"Ultimately, search isn't sustainable. Google search could become irrelevant. The market has a tendency to move, and one-trick ponies have a history of not surviving.**
>
> **ROB ENDERLE**, PRINCIPAL ANALYST, ENDERLE GROUP

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THE GRILL

John Chen

The Sybase chief says he's excited to capture what he predicts will be **double-digit growth** in data-intensive **mobile applications.**

Dossier

Name: John Chen

Title: Chairman, CEO and president

Organization: Sybase Inc.

Location: Dublin, Calif.

Favorite way to spend free time: Reading, golfing and browsing at the bookstore.

Favorite book: *Animal Farm*, by George Orwell

Worst part of your job: "Turning down innovative ideas because they would spread Sybase too thin."

Where do you want to be in your post-Sybase career? "Working at a (nontechnology) think tank or teaching."

Sybase, which celebrated its 25th anniversary in November, is a survivor: The enterprise software vendor faced near-bankruptcy in the late 1990s and a challenge in 2008 from a dissident investor who sought to break the company apart. Today, Sybase is on a roll. Its stock price has doubled in the past year. Wall Street loves the company because its technology makes high-speed stock trades possible, and some large enterprises are using Sybase software to manage their iPhones. Longtime CEO John Chen recently talked with Computerworld *about where the company is headed next.*

Your stock was in the twenties in 2008. Earlier this month, it reached $44.40, the highest it had been since January 1995. Besides Sybase's revenue growth, how much credit do you give to the $300 million stock buyback that hedge fund Sandell Asset Management pushed you to do in 2008? Not much at all. We still have 82 [million] to 83 million shares outstanding. This whole Sandell thing was a distraction. Whatever. It's not about buybacks or other mathematical gimmicks. You have to execute well, and you have to be able to grow revenue.

But couldn't Sandell's threat to launch a proxy fight with you have inadvertently

Continued on page 18

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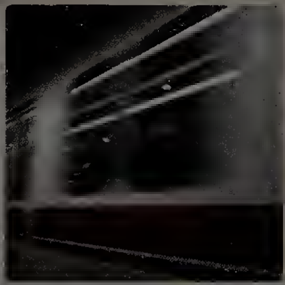

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SETHU SETHURAMAN

> **“Two new [mobile] features – geolocation and near-field communications – will generate limitless new data-intensive apps that know where you are, who you are, why you are there.**

Continued from page 16

helped tell the story about Sybase being undervalued? No. We’ve had that story out for a very long time; [Sandell] missed the big picture. Had I [broken Sybase apart like] they asked us to do — which at the time I knew was wrong, because the synergies get completely broken apart — you wouldn’t see our results today.

I’ve heard about your real-time analytics apps for Wall Street. Yes, our complex event processing software for risk platforms. The financial vertical is so excited about it, they are turning into design partners. They want to handle both structured and unstructured data in a more real-time basis.

Was this how you were able to grow despite all of the bank failures we’ve heard about in the past year and a half? The funny thing is that although there were bank and brokerage failures, trading volumes never subsided. The algorithms behind the trades are getting more sophisticated. We sold lots of [Sybase] IQ systems to do counterparty risk analysis, not only in the U.S. and Western Europe, but in China, where the firms tell me they don’t want to repeat the mistakes the U.S. made.

Are you worried that the SEC will rule that real-time trading systems like these give big firms an unfair advantage over smaller investors and should be outlawed? No, because everybody can buy one.

Well, anyone with a certain amount of money. It’s not that much money. And pretty soon, we will be releasing a hosted solution. Even small hedge funds will be able to come in and rent time. We are releasing it by June. It will cost about $37,000 a year, or 25% of the license cost.

You talked about how well Sybase IQ is doing. SQL Anywhere is, according to one of your competitors, the “dominant lightweight database.” Based on that, and how well Microsoft and IBM are doing in the database market, do you think Oracle’s acquisition of MySQL should be held up for being anticompetitive? Oracle is saying, “Hey, all of these other guys are doing so well.” In the short term, it is probably a pretty good argument. On a long-term basis, today’s small company could very well be tomorrow’s big company. So this needs to be analyzed.

What are your predictions about the adoption of mobile devices such as phones and netbooks by enterprises? Two new features — geolocation and near-field communications — will generate limitless new data-intensive apps that know where you are, who you are, why you are there. We’re very excited. Even if the markets stay bad, we think growth is still going to be in the 10% to 20% range. In a good market, that will be even higher, because in the enterprise alone, adoption will be doubling.

You just released iPhone compatibility for your Afaria enterprise management product. How popular is it? We had a deal [in mid-2009] where someone literally bought 1,000 licenses in Europe just for managing their iPhones. We have other customers talking about buying hundreds and hundreds of licenses.

I can tell you that a lot of people here at Sybase run their business using an iPhone. We are able to provide executive dashboards, route purchase orders, device management. We are testing a CRM module for SAP to run on the iPhone and Windows Mobile by [the end of] Q1. Other modules, like ERP, will also come in 2010. So there’s an awful lot that businesses can do securely with an iPhone.

As the “unwired enterprise” continues to evolve, what kind of new products might you be creating? Things like enabling collaboration or social networking during conference calls. You’ll be able to click once, call and share data with [me] on a real-time basis while we’re both on a conference call on our devices. This will be seamless. There are people working on technology that will automatically transfer the conversation you were having on your cell phone to your IP-based phone as you walk to your office desk. Basically, communication and computing are going to be inseparable. Look at HP buying 3Com, or what Cisco says it’s going to do in the server business.

You’ve been running Sybase for almost 13 years. How much longer do you think you’ll stay on as CEO? As long as I still make progress and the shareholders want me to, of course. You know, I’m quite intrigued where we are right now. We’re early to a market — mobile commerce — that promises to potentially explode. So I don’t have any immediate plans to not keep doing this.

— *Interview by* **Eric Lai**

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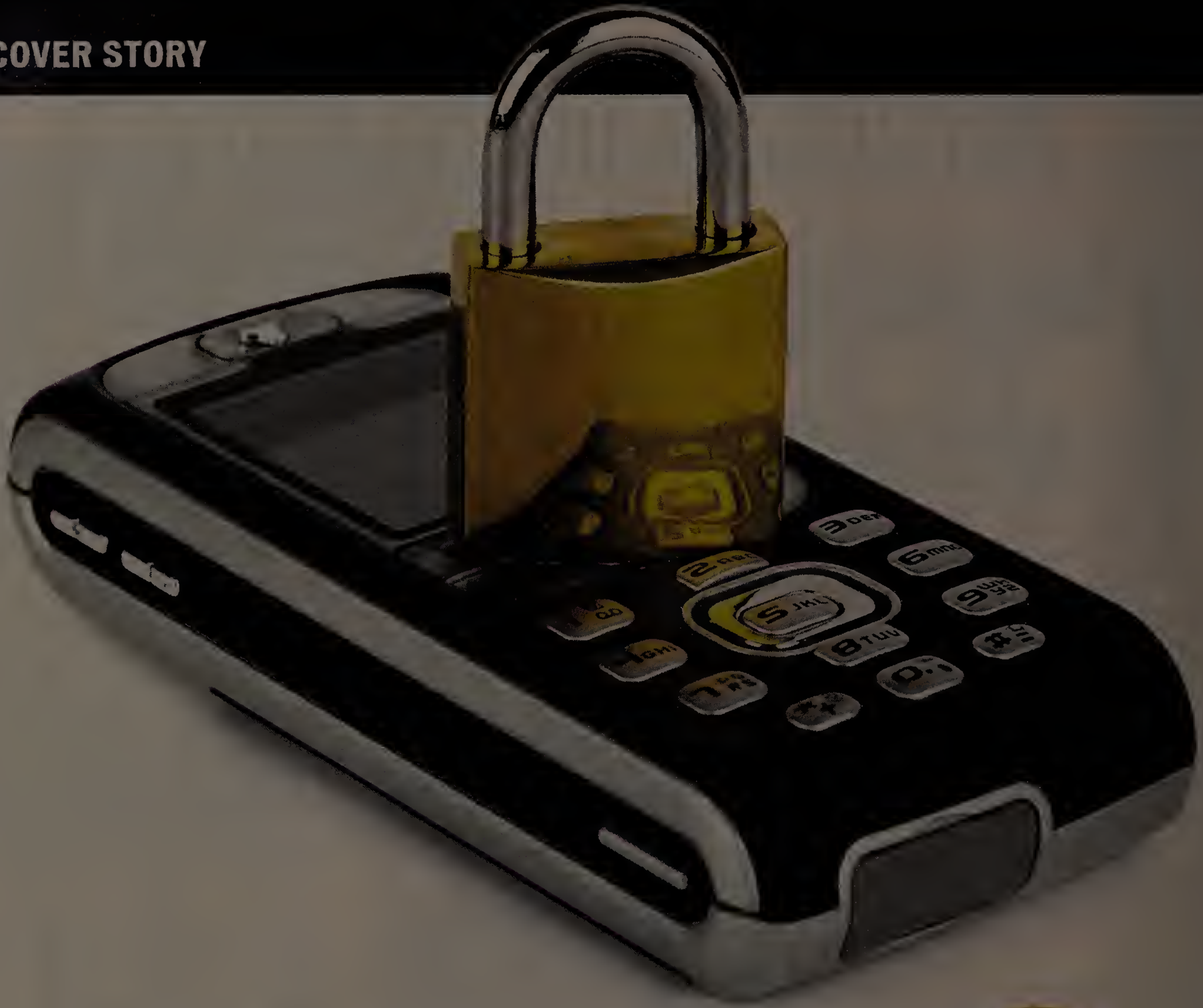

SMARTPHONES NEED SMART SECURITY

BY MARY BRANDEL

Yes, it's 'blue and plays music.' But that cute smartphone is also a serious computer that must be secured.

AS VICE PRESIDENT of IT at Windsor Foods in Houston, Stephan Henze has to stay one step ahead of the latest IT trends. That's why he's spending a lot of time thinking about securing and deploying smartphones enterprisewide. The company had only a few-dozen smartphones just a short time ago, but IT now manages about 100 of them, and Henze foresees substantial growth in the near future.

The task of securing smartphones keeps getting hairier, Henze says, while the company's need for mobile communications grows stronger, even on the shop floor, where maintenance engineers will soon receive automatic SMS alerts on their phones.

He's not sure he can continue to enforce the company policy of supporting only Windows Mobile-based phones, yet nonstandard devices will complicate his security efforts. He is well aware that for some people, a smartphone is a fashion statement. "With PCs, I was able to tell them we're not a Mac environment, but I'm not sure I can do that with phones down the road," he says.

Henze is among a growing number of IT and security leaders grappling with the challenge of securing these increasingly popular devices. The primary concern, of course, is the risk of exposing sensitive data if a phone or removable memory card is lost or stolen. Data can also be exposed if a phone is sold or sent in for repairs without its memory first being erased.

There's also the risk that VPN-connected devices could expose corporate networks to hacker and malware intrusions. And there's a growing potential for viruses to attack the phones themselves through SMS hacks and other exploits. "If I take your device and muck around with it, what if the VPN is set up on it?" asks Philippe Winthrop, an analyst at consultancy Strategy Analytics Inc. "It's a huge risk not being dealt with enough today."

Complicating matters, users are apt to view smartphones as their own personal gadgets, not something IT should control. "There's a deep underlying current of 'This is my mobile device,' " says John Girard, an analyst at Gartner Inc. A user will often see his smartphone as something that's "blue and plays music," not as an asset that needs to be secured, he says.

Smartphones' multimedia capabilities raise other concerns, Girard says. For instance, company policy might prohibit moving corporate documents to external media, but is there a policy that governs using a smartphone to take photographs in the office or record meetings?

Many companies try to take control by purchasing standard phones for employees — a move that at least enables them to support just a single operating system. But even then, users may adhere to the standard only loosely, says Paul DeBeasi, an analyst at Burton Group. "I see employees who have the company phone in their left pocket and their personal phone in their right," he says.

Indeed, in a recent study of 300 companies in the U.S. and Europe by Good Technology Inc., a vendor of mobile security and management tools, nearly 80% of the respondents reported an increase in the number of employees who wanted to bring their own devices into the workplace in the past six to 12 months, and 28% reported a data breach because of an unauthorized device.

Despite all of the security risks, "two out of three organizations are struggling in terms of not only defining but enforcing IT and business policies around mobility," Winthrop says.

Girard concurs that companies have been slow to realize the implications of a phone-related data breach. "If clients do call and ask about phones, they're asking me to render an opinion that reduces their liability for employees

LAX SECURITY

Only
23%
of smartphone owners use the security software installed on the devices.

SOURCE: TREND MICRO INC. SURVEY OF 1,016 U.S. SMARTPHONE USERS, JUNE 2009

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10 SMARTPHONE SECURITY RISKS

Here's a look at 10 common smartphone security risks, with tips for dealing with them from Gartner analyst John Girard:

1 **No configuration management plan.** TIP: Responsibility for managing smartphones should be given to the same staffers who provision and manage PCs.

2 **No power-on password, or a weak password policy.** TIP: Several vendors' device management consoles allow you to configure password complexity rules and password reset questions and answers.

3 **No inactivity timeout/auto-lock.** TIP: Timeout policies should be enforced over the air through your device management console, so that the enterprise can maintain near-real-time control.

4 **No auto-destruct/data-wiping plans.** TIP: Two methods should be used: over-the-air commands and locally initiated wipes. The latter should occur after a password has been entered incorrectly a certain number of times or when a device has been off the network for a predefined amount of time.

5 **No memory encryption rules.** TIP: Major enterprise smartphone operating systems provide settings for enforcing encryption.

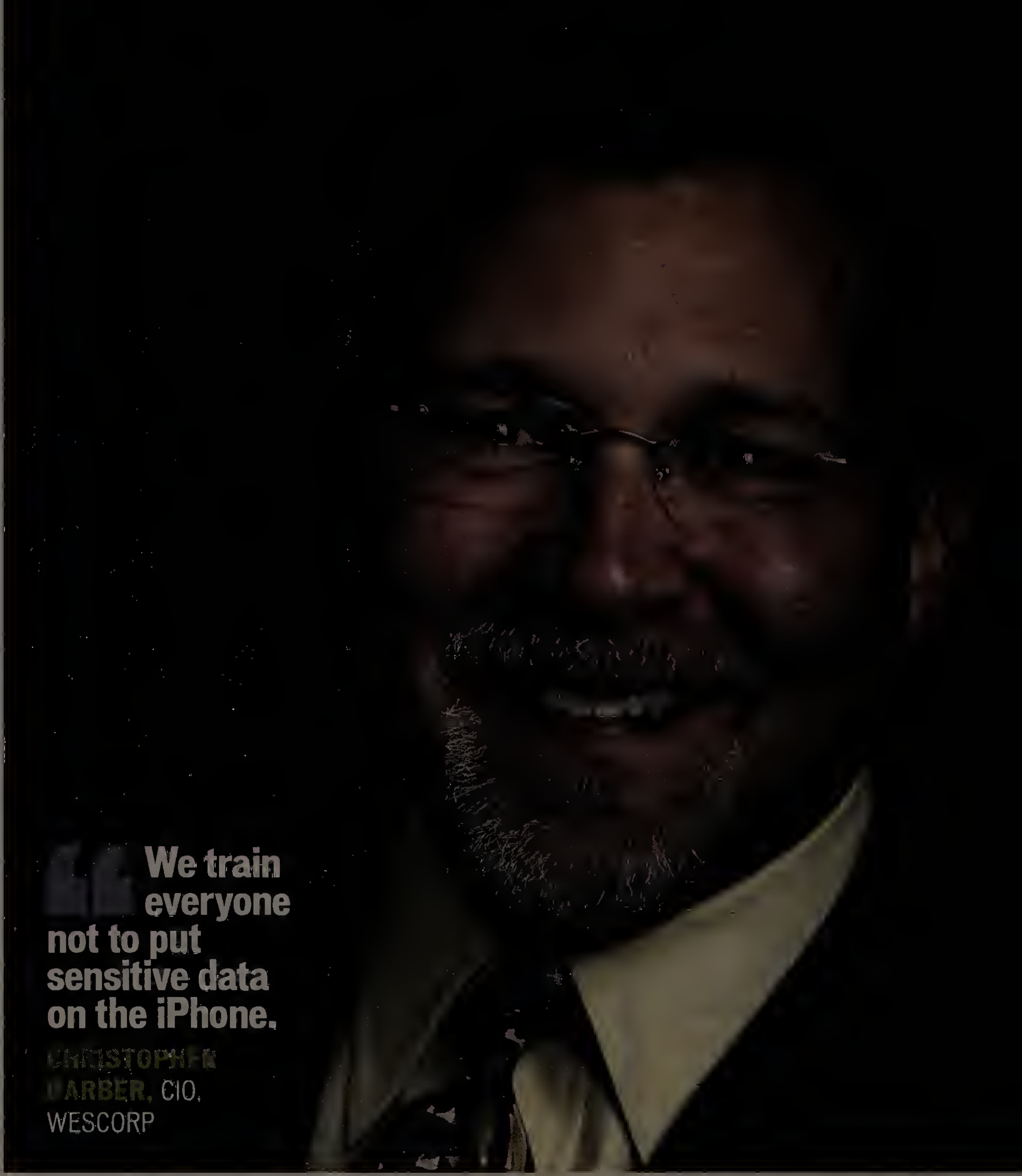
6 **No master plan for backup and synchronization.** TIP: Use a secure, over-the-air backup-and-restore tool that performs periodic background synchronization.

7 **No e-mail-forwarding barriers.** TIP: Forwarding of e-mail and attachments can be regulated with server-side settings of a corporate e-mail system, and additional filtering is available through commercial data loss prevention filters.

8 **No application certification rules.** TIP: Private keys can be used to restrict which applications are allowed to install or execute.

9 **No default browser permission rules.** TIP: Choose browser default settings that comply with company policy when phones are provisioned, to avoid providing an entry point for malicious code.

10 **No plan for dealing with smartphone diversity.** TIP: Set a policy that defines what levels of support different devices will receive. Assign smartphone support to a single IT group.



We train everyone not to put sensitive data on the iPhone.

CHRISTOPHER BARBER, CIO, WESCORP

using smartphones, [rather than] trying to do something to improve security," he says. "I'm waiting for the level of concern to grow up and match what exists for PCs."

And it should. Whether companies buy smartphones for employees or just allow their use, it's the company that's liable if data gets exposed, Winthrop says.

Technology to centrally secure and manage smartphones, whether via a third-party platform or from smartphone vendors themselves, does exist. Most analysts agree that, among smartphone vendors, BlackBerry maker Research In Motion Ltd. (RIM) and Microsoft Corp., with its latest version of Windows Mobile, provide the best management platforms.

For other devices — or for companies that support phones from multiple vendors — there are a variety of options, including management software from vendors such as Credant Technologies, Good Technology, Sybase, Trust Digital, Trend Micro and MobileIron, among others. Key capabilities offered by such platforms include centralized control of the following:

- Password management.
- Authentication authorization.
- Strong encryption.
- Inactivity timeout, in which users are logged out of an application session after a specified period of inactivity and are prompted for a password to restart.
- Remote wiping of memory if a device is lost or stolen or if the user enters his authentication credentials incorrectly a given number of times.

CENTRAL CONTROL

At Robinson Lerer & Montgomery LLC, CIO Jeff Saper has approached the security challenge by standardizing on the BlackBerry, which is issued to all employees at the New York-based strategic communications firm. Saper uses several of the 450 wireless IT policies and commands provided by BlackBerry Enterprise Server. The firm has also used Good Technology's platform to handle Palm and Treo devices, but Saper turned exclusively to BlackBerries when he decided to keep things consistent on a single platform.

Security measures include inactivity timeouts after 10 minutes of nonuse, and remote wiping of the devices if there is any fear of data compromise following a loss or theft, or if the password is entered incorrectly more than 10 times. "Even if someone could hack the password, it's safe," Saper says.

Most important, he says, users can't disable any of the security functions.

With remote wiping, it's important that data is backed up to the BlackBerry server so that it can be restored, Saper says. He can restore message history too, because the server ties into Microsoft Exchange. Such backups can make clear what data is on a device and hence what would be vulnerable if the phone were stolen, Girard points out.

While other platforms can perform remote wipes, the BlackBerry server also provides confirmation that the wipe was accomplished, which would give a company a stronger position if a case involving a smartphone data breach ended up in court, he says. "If you can't prove you did the wipe, it doesn't sound good," he adds.

Girard also believes it's important to set devices to time out after periods of inactivity. He recommends setting inactivity timeouts at one to five minutes for devices with high-value information, no more than 10 minutes for those with medium-value data and no longer than 15 minutes for those with low-value information. To resume using the device, employees should have to re-authenticate by entering a strong password.

That's easier said than done. "Because it's mobile, people think it's supposed to be easy, and they resist having to type in a seven- or 12-digit code," Girard says. "But you can't just have a four-digit code, because there's a very real chance of someone observing you typing it in."

Girard has also had clients who allow more than 10 password retries before deactivating a device. That's a highly questionable policy. "Even if you're drunk, you should be able to get in after that many tries," he says.

Christopher Barber, CIO at San Dimas, Calif.-based Western Corporate Federal Credit Union (Wescorp), supports two devices, the BlackBerry and Apple Inc.'s iPhone 3G. The iPhone runs e-mail and a relationship management application used by salespeople. To secure the iPhones, Barber set up a standard security profile that includes all the safeguards he wanted, with Microsoft Exchange Server pushing it out to the devices. He uses RIM's Enterprise Server for the BlackBerries. Security features include strong password protection, encryption and remote kill capabilities.

DATA OUT THE DOOR

"Our biggest concern with any smartphone is [that] it acts as a storage device," Barber says. "Users can plug it into the USB, download company files and walk out the door with them." With the global profile, however, he can enforce password strength and encryption, so even if users do put sensitive data on a portable device, there is a reduced chance of someone else accessing it if the phone is misplaced or stolen.

Taking a centralized approach to encryption is key, Girard says. All the well-known vendors have an encryption feature for their phones, "but unless the company takes enterprise control, it's strictly optional," he says.

But Barber says that securing smartphones is a matter of managing risks, not covering every base. He says he recently saw a YouTube video of someone who used a hacking program to break into an iPhone that was password-protected and encrypted. He also says the iPhone's removable SIM card is a vulnerability, because if a thief removes the card, the phone won't be able to receive a remote kill command because it won't be able to connect to the corporate network.

To offset this risk, Barber relies on a combination of policy and education.

"We train everyone not to put sensitive data on the iPhone," he says. In the future, he hopes to back that up with data loss prevention technology, which would monitor data being moved into an e-mail attachment or USB drive. "We're as comfortable as we can be, but there's always risk."

At Windsor Foods, Henze has also gone the centralized management route, using MobileIron's Virtual Smartphone Platform. The decision was based on his desire to manage not just security from one platform, but also carrier contracts and deployment. In addition, while he has standardized on Windows Mobile devices, he wanted to be sure he wasn't locked into that decision. MobileIron supports BlackBerries and iPhones and plans to support Symbian and Android devices.

Henze started with the basics, such as password management, auto-disable and remote wipe, but is adding centralized encryption. The platform also backs up applications and data on the phones and reports on configuration and memory utilization, which speeds troubleshooting. It also takes inventory of applications stored on the phones and disables any that aren't approved.

Henze also notes that the help desk manages the smartphones rather than a senior network engineer. In fact, a portal enables users to check on their phone usage and even perform tasks such as remote wipes and configuration themselves. "The [MobileIron] appliance makes it easier from an IT perspective," he says.

For Henze, the work of smartphone security has just begun. For instance, he's considering integrating digital rights management with the smartphone management platform.

STEPHAN HENZE has centralized management of smartphones at Windsor Foods.

"Let's say a person working with us has a laptop full of confidential information, and he gets terminated," Henze says. "With digital rights management, the device would check in with the authentication server to see if he's still a legitimate user, and if he isn't, he wouldn't be able to read those files anymore." This works better than remote wipe, he says, because if files are stored on a removable card, there is no way to delete them.

There have been concerns from some users about the Big Brother aspect of having IT monitor their phones. However, this concern is outweighed by the fact that IT can provide better service when it comes to new phone deployments, replacements and remote troubleshooting, Henze says. For instance, IT will be able to configure a new phone right after it's purchased, rather than taking three or four days. "They'll be up and running in no time, and when that happens, they'll appreciate it," Henze says.

In the end, there's no single means of maintaining security as more and more smart phones enter the enterprise, whether they're issued by the company or brought in by employees. But what's certain, says Winthrop, is that you can't just give employees free rein. It's not uncommon for IT to allow individuals to be responsible for their own devices, or even encourage the idea. But in the end, he says, it's the employer that's liable if data gets leaked.

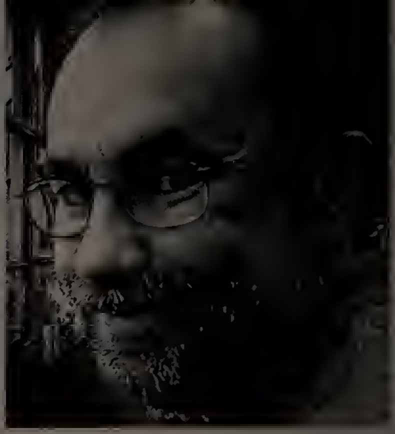
"There's a fascinating issue here, in that employees don't think too long or hard about which laptop they're going to get," Winthrop says. "But they're absolutely going to ask 'Why did or didn't they give me a BlackBerry?' or 'Why can't I bring in my iPhone?' or 'I wonder if I can get a [Palm] Pre?' " But even if organizations want to cater to every user's desire, he says, they need to take into account the need to manage the devices and the information that passes through or is stored on them.

In fact, smartphones should be viewed not as phones, but as PCs that happen to make phone calls, Winthrop says.

According to Henze, that notion has turned the world inside out. "In the old days, there was the Internet, the intranet and the internal corporate network," and each was distinct from the other. But today, with miniature yet powerful mobile devices carrying data wherever a person can go, "the egg is scrambled," Henze says. "Data sits wherever, and it's much more difficult to get ahead of it." ■

Brandel *is a* Computerworld *contributing writer. You can contact her at marybrandel@verizon.net.*

Steven J. Vaughan-Nichols



Health Care Reform We Can All Agree On

SINCE I run my own small business, I'm very interested in health care reform. You see, my tiny — two-person — company pays more than four figures a month for health insurance. Ow!

That and taxes are the two biggest expenses on my ledger. Unfortunately, I don't see much reason for hope in the crippled mess that has made it this far in Congress. Still, no matter what ends up passing into law, one common theme in all the reforms is support for electronic health records, and that's good news.

EHR is just what it sounds like: maintaining medical records in an electronic format. Some of my records are on papers locked in cabinets. God help me if someone needs to know what my EKGs from a few years back looked like.

I'm not alone. According to an April 2009 survey in the *New England Journal of Medicine*, only 1.5% of U.S. hospitals have comprehensive electronic records systems, and only 8% have basic systems that cover at least one clinical unit. Think about that: Almost every important financial transaction you do is recorded online, but your medical records are stuck in the 19th century.

Earlier this year, Congress did manage to pass a program called HITECH (Health Information Technology for Economic and Clinical Health) as part of the stimulus package. It earmarked $19 billion for Medicare and Medicaid technology incentives over the next five years and included support for EHR implementations.

Of course, there are problems with EHR. Some people are paranoid about what could happen if their medical records were available online. I can't argue with them. I'm sure bad things *will* happen. On the other hand, if I had to go to the emergency room at the second-closest hospital to my home, the doctors there wouldn't know any more about my medical history than a doctor in Somalia.

■ Your medical records are still stuck in the 19th century.

Imagine: You're in really bad shape, and they want to know not only your name, but also your health insurance number, your Social Security number, whether you've ever had a heart attack, and more. All things considered, I'd like to have a standardized EHR system.

Of course, I just used that troublesome word *standardized*. Today, EHR systems tend to be a mishmash of incompatible systems that use incompatible formats. You think you have trouble reading Word 2007 files with Word for Mac or Office 2003? Try reading an EHR with a program that didn't create it. You can't do it.

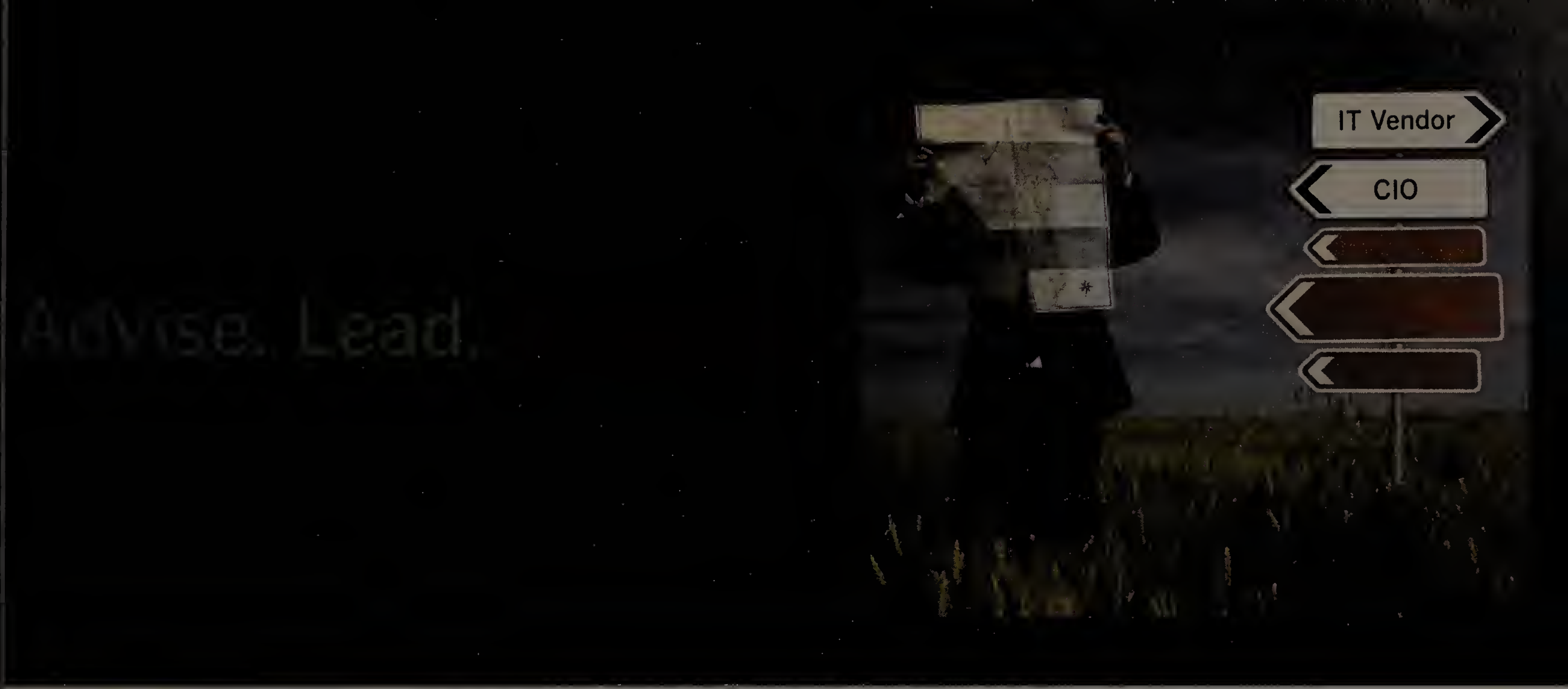
Even if all of your doctors are using the same system, you're still not out of the woods. Burton Group senior analyst Joe Bugajski says he almost died because "incoherent database design isolates patient information from one department to the next and from one organization to the next." He found that even doctors and nurses who tried to use the system spent more of their time fighting it than getting any use out of it.

Wonderful.

Clearly, EHR by itself is not a panacea. There is one system, VistA — the public-domain EHR system developed by the U.S. Department of Veterans Affairs — that's relatively widely used. In addition, there's an open-source version, WorldVistA, that should help forestall record incompatibility problems. That's the theory, anyway. In practice, there are several versions of VistA, such as Medsphere Systems' OpenVistA. The compatibility problems aren't as bad between VistA versions as they would be between VistA and non-VistA EHRs, but they're still there.

Nonetheless, I live in hope. Any EHR is sure to be better than paper health records. Now, if everyone would just agree on standardizing at least the data formats and rationalize the database management system designs, we might finally get somewhere with health care reform. Hey, I can dream can't I? ■

Steven J. Vaughan-Nichols *has been writing about technology and the business of technology since CP/M-80 was cutting-edge and 300bit/sec. was a fast Internet connection — and we liked it! He can be reached at sjvn@vnal.com.*



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Taming the Printer Chaos

Service providers can streamline a company's sprawling collection of printers for big cost savings. **By Stacy Collett**

ARE YOU turning over every stone to find hidden savings? The Procter & Gamble Co. is, and it found millions of dollars — all hidden under thousands of printers and copiers.

The Cincinnati-based consumer products company realized the savings after it hired a contractor to manage its global array of printing devices and the paper and ink cartridges they consume.

Using a managed print services (MPS) provider, as P&G did, is a way to consolidate, centralize and outsource management of your company's printing and copying functions. In return for paying a monthly fee to an MPS provider, you can cut printing and copying costs by 25% or more by leveraging economies of scale and rethinking how many printers you actually need.

Companies have been keen on the idea of copier/printer consolidation since multifunction peripherals were introduced. But MPS vendors such as Xerox Corp., Hewlett-Packard Co. and others have taken efficiency to the next level. Not only can they streamline printing and copying operations to help customers save money, but they also claim that they can maximize worker productivity by monitoring what employees are printing, and where and when they're doing it, and then suggesting workflow and process improvements.

With 135,000 employees in 80 countries, P&G prints and copies millions of documents annually. In early 2008, those documents came from 45,000 individual devices — copiers, printers, scanners and fax machines — that were shared by just four employees each, on average.

Offices were free to buy their own devices and supplies, a practice that "was absolutely not efficient," says Caroline Basyn, P&G's director of global business services. She proposed outsourcing printing at all 200 P&G sites to an MPS provider. "I want to manage this whole print fleet as if it was one printer," she says.

> **"The number of devices per employee is way too luxurious in most environments.**
>
> **CRAIG LECLAIR,** ANALYST, FORRESTER RESEARCH INC.

Basyn chose Xerox Office Services in September 2008, and P&G is on track to slim its printing and copying fleet from 45,000 devices to fewer than 10,000. Now there are an average of 15 employees using each device. With 65 sites outsourced so far, P&G has reduced printing costs by 27%, paper costs by 30% and energy costs by 40%, according to Xerox figures.

Managed Print Services

AT A GLANCE

Outsourcing the management of hard-copy devices, including service and maintenance.

$32.6 billion

The typical MPS engagement reduces the average concentration of imaging devices from two employees per device to seven or eight employees per device.

Reducing the number of laser printers and scanners reduces electricity consumption – especially since even idle devices use power to rotate their internal fusers and keep their temperatures high enough to be ready to print when needed.

SOURCE: PHOTIZO GROUP LLC, LEXINGTON, KY, 2009

Though Basyn originally chose to go the MPS route to improve efficiencies and help digitize the company, the cost savings can't be ignored. Document printing and processing costs are typically equivalent to 3% to 5% of a company's revenue, according to Gartner Inc. For P&G, that would put such costs as high as $3.8 billion in 2008.

The office environment — and its myriad printing, copying, scanning and fax devices — has become the new frontier for cost-cutting. "Unlike a lot of areas of infrastructure, like data centers, desktops and call centers — we pretty much beat up those in terms of cost savings for years — the office environment with these types of devices has been pretty unmanaged," says Craig LeClair, an analyst at Forrester Research Inc. That's especially true now that many companies are doing away with office managers, who used to monitor such spending, he says. But he is bullish on MPS as the solution to escalating printing costs.

A true MPS provider offers much more than just a maintenance and ink-and-toner-replacement contract. "This is a contract with a third party that almost plays an advisory role to you," says IDC analyst Angèle Boyd. They provide continuous monitoring of your environment and know where the output is going, how much is being used by different departments and what type of output is being produced.

In the current economy, though, cost savings is the No. 1 reason why companies choose MPS, and most are saving 25% to 29% annually on their printing costs, Boyd says.

"There's a proliferation of print device models, consumables end up becoming obsolete in closets, and the number of devices per employee is way too luxurious in most current environments," LeClair adds. "When you can ratchet up the use of these devices from three employees using one device to 10-to-1, you can take a lot of costs out of the environment."

Like P&G, Rent-A-Center Inc. was looking to improve printing efficiencies with managed print services, but the cost savings were an added benefit.

The Plano, Texas-based company has 3,100 stores, and the ability to print rental contracts and receipts is

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essential. "If we can't print, we can't rent," says Jai P. Chanani, director of technical services. He chose High Touch Inc. to manage 3,400 HP printers, with the goal of improving uptime. One year into the project, printing equipment downtime has been all but eliminated.

"We still have the same number of printers, but they're better managed," Chanani says. High Touch monitors the performance of all printers from its Wichita, Kan., office using HP's JetAdmin tool. Replacement cartridges are sent to Rent-A-Center stores before they're needed, and High Touch dispatches a service partner in the area when monitoring shows that a device needs maintenance. If a printer can't be repaired, or if the monitoring tool catches three or four service calls on the same printer within 90 days, High Touch replaces the printer with a current model at no additional cost.

"The key that drove us was to enable our stores to print anytime, but the cost savings was a nice benefit for us," Chanani adds. The project is on track to save Rent-A-Center over $1 million a year — one-third of its annual printing budget — in cartridge expenses alone.

Industry-watchers say MPS can help companies of all sizes save money, improve uptime and gain efficiencies — if an MPS program is implemented properly.

THE ASSESSMENT

A prospective service provider or independent firm will assess the printers and paper flows of the entire organization to look for economies of scale and then make recommendations to improve efficiency. Ideally, the service provider will have benchmarking data to compare the printing costs at your company with those of others in the same industry.

It's important to find a provider that can scale with you — especially if you're a large enterprise with a national or global footprint. "The highest costs savings are going to come the more you extend this throughout your corporation," Boyd says.

P&G was able to expand its MPS project to the Far East through Xerox's Fuji-Xerox operation in Asia. Still, there are a few locales in the developing world, such as parts of Eastern Europe and Africa, where Xerox is not present. "That makes it a bit more challenging," Basyn says.

LeClair advises companies to pay for an assessment from an enterprise-class MPS provider rather than accepting a free evaluation from a vendor. "When you pay them [for an assessment], you maintain your independence" to seek bids from other vendors, he says.

Find a provider with a broad range of hardware products, from desktop devices to high-end office systems. The MPS contractor should also be able to offer maintenance on brands outside of its portfolio, either directly or through a partner, Boyd says.

MPS Leaders

Worldwide market share leaders for managed print services among business machine manufacturers (not including channel partners)

1 Hewlett-Packard Co. (35%)

2 Xerox Corp. (29%)

3 Ricoh Co. (14%)

SOURCE: PHOTIZO GROUP LLC, LEXINGTON, KY., 2009

Many MPS providers not only manage devices, but also offer advice on workflow and process improvements. For example, they could help you eliminate paper from the invoicing or expense reporting processes by suggesting that you scan documents instead of copying them, LeClair says. That way, he notes, "you improve cycle time, get rid of file cabinets and save employees time."

Make sure that the optimized environment doesn't sacrifice productivity in the name of cost savings, Boyd says. (It's possible to eliminate so many printers that employees have trouble getting their work done.) Toward that end, you could ask for two proposals: one that maximizes cost savings, and one that balances employee productivity and cost savings, she says. "Ask the provider how, through SLAs, contract components and rollout of the program, they are going to ensure that the productivity of employees is enhanced, not just maintained," she adds.

BREAKING OLD HABITS

When a provider shows up and tells employees they'll have to relinquish their personal printing devices, expect a lot of resistance, MPS veterans say. Many providers offer change management experts and tools to help customers with the transition.

At P&G, people in some business units feared that the equipment reduction would hurt their productivity, Basyn says. "Interestingly, as soon as we did the implementation, those same leaders would say the opposite. They don't have to take care of any of the supplies, and the [equipment] is much more reliable. We have uptime of 99.2%."

P&G sold MPS to its employees with a combination of hard and soft arguments promoting a centralized operation. "We know the culture is different by person — some people go with the soft arguments, others with hard arguments," Basyn says. P&G first promoted the overhaul as a "green" sustainability project and then sold it as a cost-saving project. The company also capitalized on the competitive nature of its business units by publicizing how each division was utilizing MPS and how units compared to one another.

Ideally, the MPS provider will also recommend policies that will help ensure that employees don't revert to old habits.

"If you don't have policies and enforce them," Boyd says, "department managers or employees will go out and buy personal devices, and before you know it, you're back to the old state of affairs."

Both P&G and Rent-A-Center consider their MPS providers to be strategic partners.

"The way we measure success with a partner is that once you're in discussion, the word *contract* never comes to the table," Basyn says. And with Xerox, he adds, there was no quibbling over the project's minutiae: "We're very much on the same page." ■

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THE COMPUTERWORLD
HONORS PROGRAM

Command & Control

The Pentagon develops real-time monitoring software to track thousands of contractors providing support to troops in Iraq and Afghanistan.

By Mary K. Pratt

IMAGINE TRACKING a mobile workforce of nearly 200,000 contractors through rugged, hostile territory using only spreadsheets handled by officials who aren't inclined to share the data.

The U.S. Department of Defense found itself in that position in Afghanistan and Iraq. It had hired tens of thousands of contractors to support its troops in those locales, yet officials had limited visibility into what contractors were doing.

"We had no one managing the contractor side of the house," says Gary Motsek, a retired Army colonel who is now assistant deputy undersecretary of defense for program support.

SPOT software taps into databases throughout the U.S. military, so officials can determine whether contract workers have access to dining hall food as part of their contracts.

At a Glance

Scope: The Department of Defense has 119,706 contractors and 135,000 military personnel in Iraq and 73,968 contractors and 58,000 military personnel in Afghanistan, according to Gary Motsek, assistant deputy undersecretary of defense for program support.

Project champions: Those who have played leading roles in deploying SPOT include Army Lt. Col. Richard Faulkner, program manager for SPOT; Gary Motsek, assistant deputy undersecretary of defense for program support; and Niels Biamon, deputy G3/5 for current operations with the Army Materiel Command.

IT team: About 15 to 18 IT people from Booz Allen Hamilton and the Army Materiel Command work on SPOT at any given time.

Project ROI: For 2010, the estimated cost for SPOT is $21 million, which covers its operations for the Department of Defense, the State Department and the U.S. Agency for International Development. Military officials say SPOT reduces the time personnel spend manually entering and tracking data and thereby limits the corresponding cost of doing that manual work. Moreover, it allows military officials to better utilize contractor resources and make quicker decisions. It also prevents contractors from using military support services without authorization.

Recognizing the need for better management, the DOD developed the Synchronized Predeployment and Operational Tracker, or SPOT. The project earned the Office of the Assistant Secretary of Defense the top spot in the government category in the 2009 *Computerworld* Honors Program.

The software pulls together and organizes crucial information about contractors from databases throughout the U.S. military. According to defense officials, SPOT is the first and only single integrated database containing authoritative data about contractors on the battlefield. It provides visibility into contractor movements and capabilities, accounting for contractors from the time the contract is awarded through deployment, redeployment and closeout.

"Somehow you have to keep track of these folks. You have to know where they are and what the capabilities are. SPOT allows us to do all that in an automated, real-time manner," says Niels Biamon, a retired colonel who is now deputy G3/5 for current operations with the Army Materiel Command.

> **"Our senior leaders realized that having knowledge about what contractors were where . . . was necessary. RET. COL. NIELS BIAMON,** DEPUTY G3/5, ARMY MATERIEL COMMAND

As a system user, Biamon knows the benefits of SPOT firsthand. He says that if an officer needs someone to work on unmanned aerial vehicles in Iraq, for example, that officer can use SPOT to identify the nearest technicians capable of handling the job, determine whether they're available to take on the project and, if so, assign the task to them.

The Defense Department didn't operate that process efficiently prior to SPOT's official deployment in 2007.

"With contracting, in the past we weren't concerned with what people it took. We bought an outcome," says Army Lt. Col. Richard Faulkner, program manager for SPOT.

The military departments and divisions that were hiring contractors all used their own systems to track the contractors they hired, usually using Excel spreadsheets, Faulkner says.

"People were asking when the war first kicked off, 'Who do we have?' We had these program executive officers who would send program managers in and out of the theater, and there was no means but manual spreadsheets to know who was there and not there," he explains. The process was cumbersome and expensive.

SPOT gives military officials a real-time window into the movements and capabilities of thousands of support contractors.

"As you can imagine, there was no scalability there," Biamon says.

Officers saw the need for improvement early on, Faulkner says. In 2003, Theresa Miller, a civilian working in the Special Project Office at Fort Monmouth, N.J., developed a Web-based application, then called SPO Tracker, to oversee contractors.

SPO Tracker caught the eye of higher-ups in the Army, and the Army Materiel Command brought SPO Tracker under its wing in 2005. The Pentagon, which was mandated by Congress to establish a database to track contractors, designated SPOT as its official solution in January 2007.

"Our senior leaders realized that having knowledge about what contractors were where — and what the capabilities of those contractors were — was necessary," Biamon says.

As military officials scaled up the system for use by the full DOD, they adhered to three principles: Use existing capabilities rather than creating new ones; leverage the banking industry's ATM model, which allows for enrollment at point of service, portability of credentials and universal access; and provide a universal tracking capability.

SPOT was developed using commercial off-the-shelf products — specifically, Microsoft .Net, SQL Server and Adobe LiveCycle — and constructed using service-oriented architecture that promotes system-to-system integration to access authoritative data.

It's a challenging project, says Thomas Shaffery, SPOT data management lead for Booz Allen Hamilton Inc., a McLean, Va.-based consulting firm that is working on the project. He says ensuring that the system remains scalable in the face of changing requirements is a challenge, as is bringing on new user communities and supporting their needs.

Faulkner says another hurdle was setting up point-to-point integration that could accommodate custom and legacy systems; SPOT developers had to do custom integrations to accomplish that.

To help address the various challenges, developers created a Web service to which military officials and external companies could subscribe in order to access SPOT, Faulkner says.

Shaffery says developers also had to find a way to accommodate a high number of users — today there are 10,000 unique users registered — and ensure that the system operates in a consistent manner for all of them.

"It's always a struggle to do data migration and make everything conform nicely," he says, noting that SPOT leaders specify requirements to ensure that users input only high-quality data.

The military contract information that's entered into SPOT includes the name of the company hired and the names of its workers, plus their duties, their locations and what military support, such as food and housing, they get. Contractors check in with SPOT using letters of authorization that the system generates for them. The letters have bar codes that can be scanned at terminals in 120 locations in Afghanistan, Iraq, Kuwait and Qatar. Authorized military officials anywhere can access that contractor information in real time. ■

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THE

VENDORS PLAN TO OFFER SERVERS, STORAGE AND NETWORKING AS AN INTEGRATED PACKAGE.

FACED WITH the continued commoditization of servers, IT vendors this year will try to differentiate their offerings by moving toward more highly integrated, unified compute platforms.

That means combining servers, storage and networks — and related management software — as a package deal, says Rockwell Bonecutter, data center technology and operations practice lead at Accenture Ltd. Vendors tried something similar a few years ago with the launch of modular "data center in a box" products. But this time, they are thinking out of the box by focusing squarely on the core data center infrastructure.

SOUP TO NUTS

With integrated systems, you're not just buying a server; you're buying the entire infrastructure to go with it as a single, managed entity. The systems are highly integrated and highly scalable, and they include computing, storage and networking systems, as well as business services management, automated orchestration and provisioning capabilities. In some cases, those systems might include power delivery and cooling as well.

When combined with virtualization, converged systems can form the foundation of a private cloud-computing resource.

Bonecutter says the approach addresses real pain points for IT. "I'm spending the majority of my time meeting with CIOs about implementing cloud computing or [about] orchestration and provisioning," he says.

Hewlett-Packard Co.'s BladeSystem Matrix is a harbinger of what's to come, says Jim Ganthier, vice president of HP's industry standards group. He says Matrix lets administrators remove and reinsert blades between slots, while virtual connects ensure that storage and network resources move with them — no reprovisioning required.

The systems also allow for workload balancing based on the need to optimize power consumption, usage or a combination of the two. With Matrix, he says, "your enclosure is your data center." But HP plans to implement the same model this year using rack-mounted HP servers with storage and switch gear.

IBM has a similar approach. It wants to create a more efficient, integrated system that weaves everything together more tightly. But will CIOs be willing to buy all their storage, server and networking equipment from HP or IBM to make it work?

Tom Bradicich thinks so. The IBM fellow and vice president for architecture and technology for IBM's x86 servers says the interchangeability, or "fungibility," of the x86 platform is what made it so popular.

He says enterprises will be willing to trade some fungibility for a more efficient system — albeit one in which the x86 system morphs to include some proprietary technologies and the customer buys the integrated package from IBM.

Though he acknowledges it will be "less fungible," he believes "that will be tolerable because complex workloads make that trade-off worthwhile. There will be a higher tolerance for some parts of the system to be more fixed than fungible."

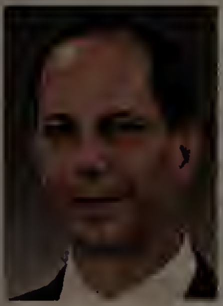
Dell Inc. is pursuing a similar strategy but is weaving together support for third-party equipment and taking a more open, standards-based approach. "We use heterogeneous components but manage in a converged fashion," says Paul Prince, chief technology officer for Dell's enterprise products group.

Robert Beach, director of IT services for the Seminole County, Fla., government, says the idea is an interesting one, but he's not sure he wants to be locked into one vendor for everything. "To me, it sounds like you're putting a lot of eggs in one basket," he says.

Scottrade Inc. CIO Ian Patterson, who runs a very large data center, also has concerns about fungibility and vendor restrictions. But, he says, "it could also be a positive in the long term, simply because of the ability to monitor the interactions of all of these pieces from one box."

He sees the potential to get better performance than he gets with devices managed across the network, but he says it's still too early to judge. "I would look out at least 12 months before investigating this as a viable technology," Patterson says. ■

> **"To me, it sounds like you're putting a lot of eggs in one basket.**
>
> **ROBERT BEACH,**
> DIRECTOR OF IT SERVICES, SEMINOLE COUNTY, FLA.



> **"I would look out at least 12 months before investigating this as a viable technology.**
>
> **IAN PATTERSON,**
> CIO, SCOTTRADE INC.

My Cell Phone Won't Connect

Why cell network coverage isn't always seamless and can be inconsistent among different carriers. **By Russell Kay**

IT HAPPENS to everyone: You try to make a cell phone call and find you have no service. What's the problem? The device in your hand is more powerful than a full-blown computer from just a few years past; why can't it connect?

Unfortunately, computing power doesn't relate directly to connectivity. Cell phones only work over short ranges and can't transmit more than about eight miles. Most urban and well-populated areas have plenty of cell sites, so coverage isn't a problem, but sometimes there's no cell service within range.

Cellular networks use a series of base stations, each covering a given area known as a cell, and these cells are designed to overlap so as to provide total coverage for a given geographical area. When you switch your phone on, it connects to the nearest base station; as you move from place to place, you may get closer to a different base station, and the network automatically switches your phone to the new cell. But if a base station is already working at full capacity, it can't accept your signal, and the result is a dropped call. Your phone just won't work in that place at that particular time. Dropped calls can also happen in areas where cells don't overlap.

The fact is, the extent and quality of service, and the degree of coverage from various carriers, can differ dramatically from one area to another. People who change carriers (perhaps to get a specific device, like Apple's iPhone, which requires AT&T service) might find that their ability to make specific connections changes significantly — for better or worse.

U.S. carriers use two fundamentally different types of cell phones: GSM, the generally accepted international standard used by T-Mobile and AT&T; and CDMA, the technology used by Sprint and Verizon. This difference doesn't prevent you from calling or connecting to another cell phone that happens to use the other system, but it can affect the available coverage in a particular area. GSM phones might operate on several different sets of frequencies; if you're in Europe, your U.S. GSM phone may or may not work — and even when it does, it may connect differently (and at different calling rates) than you were expecting. In fact, for international travel, it may be significantly cheaper to rent a phone at your destination; the major disadvantage is that you'll have a different phone number.

Coverage Limits

Cell phones have limited range and rely heavily on the cellular network to make a connection. If you leave your carrier's covered area, you won't be able to connect – unless you have access to an alternate communications method such as Wi-Fi.

If you can't make a cell phone call, what about the other communications modes that your smartphone may support — 3G service (including WiMax), Wi-Fi Internet access and text messaging? Whether you can use them is a good question, and the answer is a qualified "maybe." If you can't access a cellular base station, you probably can't send an SMS text message, either. But you might be able to get totally separate Wi-Fi access and use e-mail. 3G connections are designed to offer data transfer speeds and capacities that are significantly greater than those available with basic cell connectivity. And depending on the flavor(s) of 3G that your phone and your carrier support, you can sometimes communicate via this method when the standard cell connection doesn't work. As always, just try it and see. ■

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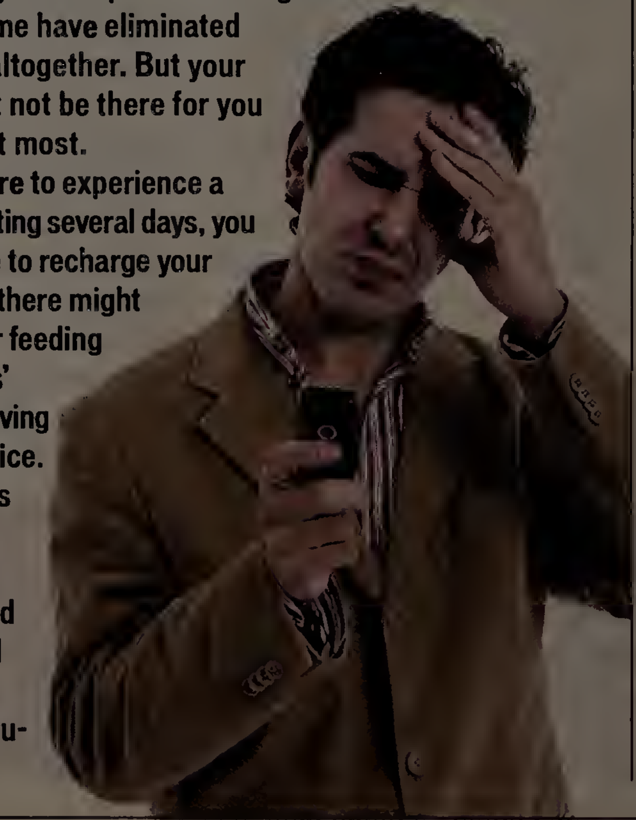
Emergency Deficiencies

Many people rely on cell phones during emergencies, and some have eliminated their land lines altogether. But your cell phone might not be there for you when you need it most.

If your area were to experience a power outage lasting several days, you might not be able to recharge your cell battery, and there might not be any power feeding the cell networks' base stations, leaving you without service.

And in a serious emergency, the sheer volume of calls being placed can overload cell networks so that few calls can actually get through.



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M&A Prep All Goes According to Plan

Good news, readers. Not everything we do as security managers has to **involve disaster.**

Trouble Ticket

AT ISSUE: It's time to evaluate the security posture of a small company that's being acquired.

ACTION PLAN: Years of experience with such tasks will pay off.

I'VE BEEN through several mergers and acquisitions, so with my company preparing to acquire a small business, I pretty much know what I have to do. That means I don't have any crises to report this time, but I hope the lack of difficulties will reassure the security managers who read this column that things don't always have to be difficult.

My M&A assessment typically starts with an interview with the CIO of the acquisition target. In this case, though, the company is so small that there is no CIO, and the IT function is completely outsourced, so I met with the CEO instead. He could give me only a few minutes, so my questions were brief. I wanted to know what company data he considered sensitive, where this data resided and whether there had ever been any security breaches.

In a small company, the CEO is also likely to know of any employees who might react negatively to the news of an acquisition. It's good to find out about people like that, because employees who feel threatened by an acquisition can do some damaging things. In one case in my experience, an employee altered the source code algorithms he was working on. He was found out and fired, whereupon he told us that he took the action as "job security." Didn't quite work out. Neither did the action of an employee at another company who decided to take home some gold electronic connectors to help tide him over in the event of a layoff. He explained that he was planning on returning the property after he was sure he wouldn't be fired.

I also met with the consultants who manage the IT infrastructure. They were very courteous and had already prepared an abundance of information to make my job easier: network diagrams, lists of servers and IT assets, contracts with service providers, points of contact, etc.

■ **Employees who feel threatened by an acquisition can do some damaging things.**

I always carry a USB device containing tools such as Microsoft Baseline Security Analyzer, Sysinternal's RootkitRevealer, and Wireshark, an open-source analyzer for reviewing network traffic. With those, I could get a feel for the security posture of the PCs and servers in regard to patches, baseline configuration and antivirus software and determine whether there was any suspicious network traffic that would indicate a compromise or abuse of the network. I know it's not a 100% indication, but since I had only a limited amount of time, it had to do. Lack of time also means my recommendations will be based on some assumptions, since I can run my tools on only a few PCs.

This case seemed pretty typical of most M&As I've done, with many of the PCs not up to date with security patches, and the antivirus software not from a leading vendor. I didn't spot any suspicious network activity, but the company does have a weak firewall policy, insecure wireless access points and unsecured remote access. It also pays no attention to intellectual property protection and has a fairly open and shared directory structure.

ON TO DAY 1

In my company's M&A life cycle, Day 1 is when the acquired company legally becomes ours. As we work toward Day 1, employees at our target will need to access various apps and services such as e-mail, benefits and payroll. I've allowed the use of Citrix XenApp to give them access to our company's resources via two-factor authentication. The only restriction is that they can't upload any data from their current PCs to the Citrix environment and vice versa. This is a small inconvenience that will last only a short period of time, until we mitigate the security findings and then connect the networks. At that point, our new office will become an extension of our current corporate environment through a dedicated VPN or MPLS circuit. ■

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To join in the discussions about security, go to **computerworld.com/blogs/security**

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*

OPINION

Paul Glen

Projects and the Ungrounded Middle

PROJECTS ARE CHALLENGING, and each phase has its special difficulties. The beginnings are abstract and ambiguous. The ends are exhausting and dramatic. But, emotionally, I think that the middles are the hardest. Project middles feel never-ending; we imagine ourselves as Sisyphus, cursed by the gods to forever roll a boulder up a hill only to have it roll back down again.

Every project starts with a dream — a fantasy, really — of transformation, of progress. We're either running from something or to something. The trigger is either the vision of a novel opportunity for innovation or one of renovation, a chance to repair or replace something that is terribly broken, bad and wrong. Projects are formed in this hazy and heady stew of motivation and vision.

I think of them as being like the clichéd movie scene in which our hero approaches a vast chasm spanned only by a rickety rope bridge. He is either fleeing a band of evil attackers and must cross the bridge to escape certain doom, or he's trying to rescue his true love, who's in danger on the far side. Either way, he feels compelled to begin his transformative journey.

Whether we take the first steps on our project journeys with trepidation, terror or glee, we cannot really see the other side clearly, nor know the condition of the bridge. But venture forth we do. We tiptoe or run out onto that rickety span as far as we dare.

But invariably, at some point, things become clearer. Usually one of two things happens. One possibility is that the fantasy may be revealed to be just that — a dream that is either unattainable or undesirable. Halfway across the bridge, we see that what waits on the other side is not the haven or the bliss we seek. It may not be undesirable, but it is not the perfect progress we had hoped for.

The ungrounded middle is the emotional low point of any project, when we feel exhausted and frustrated.

Alternatively, even if the dream remains, the difficulty of the journey becomes clear. The condition of the bridge turns out to be worse than we suspected. The work to be done seems overwhelming, and the obstacles insurmountable.

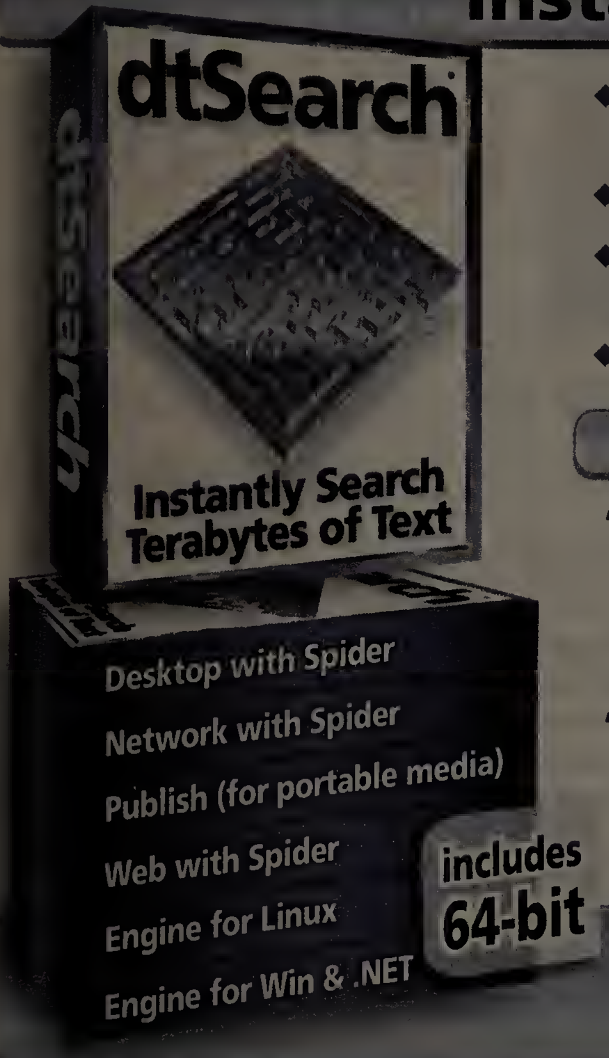
The moment when clarity hits is the beginning of the ungrounded middle. It is the emotional low point of any project. We feel exhausted, frustrated or perhaps even shamed by our prior optimism. It is also the most dangerous part of any project, because everyone reacts to the emotionality differently.

Some people just freeze. They stop, sit down and refuse to move until a new and better vision arrives. Others give up and throw themselves off the bridge, canceling the project. Some deny that the revelation ever occurred and plow ahead, clinging to the plan regardless of its relevance. And some begin a period of frantic and unfocused activity, either trying to shut out the pain or searching for a new route across.

When discussing success factors for projects, I most often hear managers talk about beginnings and endings. They recognize the importance of clear vision at the outset and brutal focus at the end. But these are the rational structures underlying a successful project. Managers also need to pay attention to the emotional ones.

The challenges of the ungrounded middle need to be better appreciated and managed. If you want to reduce the number of projects that are aborted or delayed or that deliver suboptimal results, look to the emotions of your team during the ungrounded middle and help them cope more functionally. You can't eliminate their feelings or their reactions to those feelings, but by openly acknowledging them as a normal and natural part of the project life cycle, you can diffuse their power, freeing the team to make better decisions. ■

Paul Glen *is a consultant who helps technical organizations improve productivity through leadership, and the author of the award-winning book* Leading Geeks *(Jossey-Bass, 2003). You can contact him at info@paulglen.com.*



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Career Watch

Goodbye to Bad Bosses

If you've ever left a job solely because you couldn't tolerate working for your boss, you aren't alone. In a CareerBuilder.com online survey, 43% of the respondents said they had jumped ship rather than put up with a bad boss. Women were more likely than men to submit a resignation in order to get away from a supervisor; 48% of the women responding said they have done it, compared with just 39% of the men. **The survey also turned up these specific examples of bizarre boss behavior:**

- **Hiding in weird places in order to spy on employees.**
- **Taking a bite of a doughnut that a worker had left on his desk.**
- **Holding a meeting while locked inside the bathroom.**
- **Bringing a gun to work and cleaning it in an area behind employees.**
- **Tap-dancing on an employee's desk.**
- **Showing everyone a kidney stone he had passed.**
- **Breaking down and crying during a meeting, "Why don't you like me?"**
- **Keeping his lunch in a freezer intended for human organ storage.**
- **Using a Taser stun gun on a subordinate.**
- **Instituting "Talk Like a Pirate Day."**
- **Riding a child's scooter through the office.**

CareerBuilder.com has set up a way to deliver a message to your own bad boss. You can log onto AnonymousTipGiver.com to have an animated message e-mailed to your boss (or other co-workers). You can choose from a menu of tips, type in your own or record one over the phone.

GENERATIONAL TOLERANCE OF BAD BOSSES

Age of worker	Percentage who have left a job because of a bad boss
18-24	[illegible]
35-44	[illegible]
45-54	[illegible]

PAGE COMPILED BY JAMIE ECKLE.

■ **Q&A**

Neil Jacobson

The founder and CEO of **Abilicorp** discusses the fit between IT and people with disabilities.

In what ways are people with disabilities superior employees? I would not say people with disabilities are superior employees. I would say that there are aspects of having a disability that result in many people with disabilities being great employees. In my experience – and I have helped to place tens of thousands of people in jobs over the past several decades – I would say that employees with disabilities stand out as being incredibly creative, persistent, hard-working and loyal. Many of us who have significant physical disabilities have to be creative and persistent for our own survival. Because we are often not able to do things the "normal" way, we are literally forced to be creative and perform tasks however we can, and we carry that creativity into problem-solving in the workplace. We have to be persistent and know there's always a way to accomplish a task. Having a disability is in itself hard work. I probably consume more energy getting dressed in the morning than most people do in their workout at the gym.

As far as loyalty goes, unfortunately most people with disabilities know how difficult it is to find a job, and they know a good thing when they get it. According to the National Organization on Disability, people with disabilities stay in jobs longer and have less absenteeism than the average worker. I stayed at Wells Fargo for 29 years.

What sorts of jobs are the disabled particularly well suited for in the IT realm? I dare not generalize. Undoubtedly, for every IT job, there are great people with disabilities well suited for it. For me, IT development was always my sweet spot. It is one of the few professions where there is always a way to give your client/customer exactly what they want. With IT development, you always know when you did well (it worked), and when you need to do better (it didn't work).

IT management is another area. Many people with disabilities are forced to be good managers in their daily lives – we learn how to teach and manage others to get things done that we are not able to do for ourselves.

What's the track record of Abilicorp in placing the disabled in IT jobs? Before working for Wells Fargo, I co-founded the Computer Technologies Program in Berkeley, Calif. I directed and taught the program for four years, and 92% of my students found jobs as programmers. Since then, 28 other programs have started nationwide that have used the Berkeley program as a model. Over 60,000 people with disabilities have found careers because of these programs. Having started Abilicorp less than a year ago, it is still very young, but I know we will see the same kind of success.

- JAMIE ECKLE

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TRUE TALES OF IT LIFE AS TOLD TO SHARKY

Password Wars

At the company where this pilot fish works, IT is in the middle of a PC refresh. "At the end of the day, you send your laptop in by overnight express," fish explains. "To work on your new laptop, IT has to change your password to one they know. When it's finished, they overnight your laptop back to you. Imagine the distress that it causes for some workers to be without their PCs. They go find another PC to use for the day. Meanwhile, at the PC lab, the password gets changed. User with temporary PC calls help desk: 'Hello, my network access is gone. Can you change my password?' Help desk to user: 'OK, your password is now changed.' And back at the PC lab: 'Hey! I can't load the image onto this new laptop!' "

How to Save Money

This IT shop currently has zero budget for training, reports a pilot fish whose belt is pulled *very* tight. "So when we catch wind of a new product deployment, we scramble to find resources for self-training in the form of public betas, free trials and begging vendors, and begin the process of learning, analyzing and breaking the product," fish says. "Because of this, when our director periodically sends word of an impending software audit, we wipe our machines and reinstall everything from scratch. This means a day or so without one or more of our machines, but they run like champs. You can imagine what we invariably hear a few weeks later when the director needs to install that new software package: 'Do you guys have some way to get around the license key on this?' Our answer is always: 'Buy the product.' "

Gee, Thanks

Pilot fish takes a job at a big manufacturing plant with big IT problems. "It was a mess," fish says. "No backups, bad networking, you name it." So he gets to work hammering things into shape. And after two years, backups are well organized, the network is running perfectly, and fish is pretty satisfied with his efforts. And so, apparently, are his bosses. "I got called into HR one afternoon," fish reports. "I was told, 'We have to let you go to save money. We're going to support the plant remotely. But we couldn't have done this without the great work you did.' "

In the Morning ...

Memo goes out: "We would like users to power down thin clients and monitors at the completion of the work day. Powering down these devices will further assist with the power-savings initiative." User writes back to IT pilot fish: "If I power down my thin client, how am I able to put information on the public Web site and share files?"

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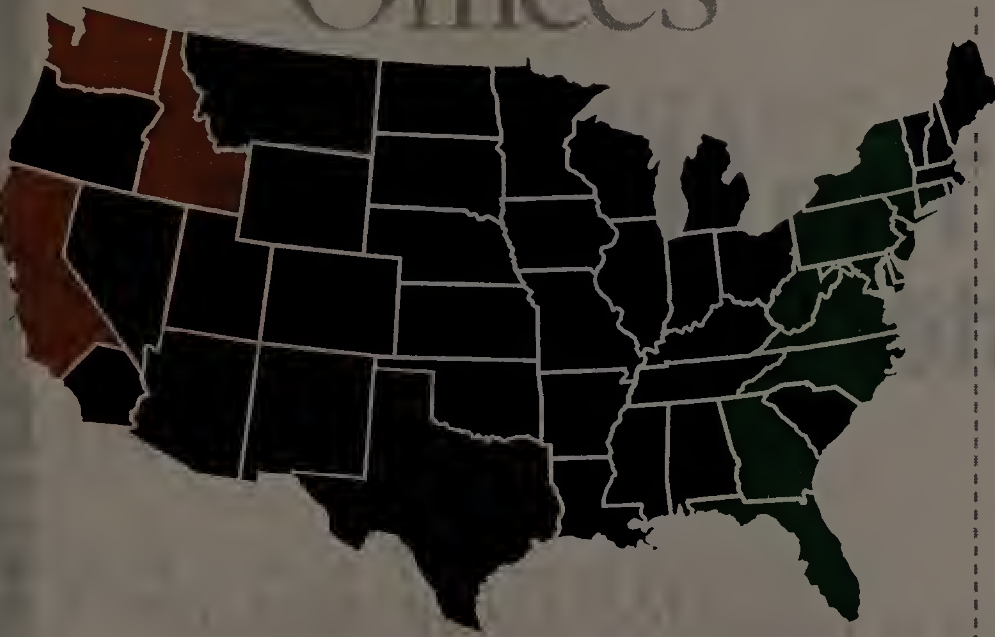

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OPINION

Preston Gralla

Would Two Microsofts Be Better Off Than One?

NEARLY 10 YEARS AGO, on April 3, 2000, U.S. District Court Judge Thomas Penfield Jackson ordered that Microsoft be broken up into two companies — one to develop and sell operating systems, and the other to develop and sell other types of software. The order came as a result of a federal antitrust suit against the company and a finding of fact that said Microsoft had abused its monopoly power.

Jackson's order was overturned by an appeals court, and in November 2001, Microsoft and the U.S. Justice Department settled; Microsoft was allowed to stay intact. At the time, Microsoft officials breathed a sigh of relief that they would not have to break up the company.

Ten years on, Microsoft is struggling to maintain its dominance in a world in which Google thrives, Apple is resurgent, and the Internet has arguably become more important than operating systems. Where would Microsoft be today if it had been split in two a decade ago? There's no way to know, of course, but I think there's a reasonable chance that the two resulting companies would have thrived and been better able to fend off Google, Apple and other competitors.

Why would two Microsofts be better off today than one? The primary reason is that a split might have altered the corporate culture and led to different business and investment decisions. In 2000, Microsoft had no serious competition, either in operating systems or productivity suites. Both Windows and Microsoft Office were virtual monopolies. The company was a money machine with no serious challengers in sight.

In the years since then, Microsoft behaved as corporations normally do when they have a monopoly or near-monopoly and have hit on a successful business plan that brought enormous success for several decades: It kept doing what made it a success. That meant milking Windows and Office for all they were worth.

In the years since it escaped being carved up, Microsoft has kept doing what made it successful, but that hasn't been enough.

Sure, Microsoft knew that the Internet was important and would be increasingly so, but it felt no compelling need to change its way of doing business. It acted as if it had all the time in the world to become dominant on the Internet. After all, Internet Explorer had become the world's most dominant browser, and the company already had the most dominant operating system and the most dominant productivity suite. What could go wrong?

Plenty, as it turns out. Because Microsoft moved so slowly on Internet search and other Web-based services, it allowed Google to become the dominant Internet company. And it also allowed competitors to beat it in creating operating systems for mobile devices — just look at Apple's iPhone and Google's Android operating systems.

If Microsoft had been split into two companies, all this may not have happened. The operating system company might have recognized that as a one-trick pony, it needed to expand its market in order to thrive, and thus may well have put more focus on developing a killer operating system for mobile devices. Mobile may have become a focus rather than an afterthought.

Similarly, the application software company may have had to expand beyond its core and may have recognized that Web-based applications and services were the future. That would have meant moving on Internet search earlier and not ceding the market to Google. And it would have meant moving Office to the Web much more quickly as well. Google Apps might have been no threat at all.

There's no proof that all this would have happened. It's possible that Microsoft, cut in two, would have been more vulnerable to competitors than it is as a single behemoth. But I think there's a good chance that it would be in a better position today if it had been split up 10 years ago. ■

Preston Gralla *is a contributing editor for* Computerworld.com *and the author of more than 35 books, including* How the Internet Works *(Que, 2006).*

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